

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF TEXAS  
DALLAS DIVISION

ZENIMAX MEDIA INC. and ID ) 3:14-CV-1849-K  
SOFTWARE LLC )  
Plaintiffs, )  
)  
VS. )  
) DALLAS, TEXAS  
)  
OCULUS VR, LLC, PALMER )  
LUCKEY, FACEBOOK, INC., )  
BRENDAN IRIBE and JOHN )  
CARMACK, )  
Defendants. ) January 25, 2017

TRANSCRIPT OF JURY TRIAL, VOLUME 17  
BEFORE THE HONORABLE ED KINKEADE  
UNITED STATES DISTRICT JUDGE

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Proceedings reported by mechanical stenography and  
transcript produced by computer.

1 JURY TRIAL - JANUARY 25, 2017

2 P R O C E E D I N G S

3 THE COURT: Y'all need anything before we start?

4 MS. WILKINSON: Yes, sir.

5 THE COURT: On the record, off the record?

6 MS. WILKINSON: On the record, please.

7 THE COURT: Okay.

8 MS. WILKINSON: May I hand up a copy of a letter we  
9 sent Plaintiffs' counsel?

10 THE COURT: Absolutely.

11 MS. WILKINSON: Your Honor, you may recall we asked  
12 Mr. Altman on Friday, and then I asked him again on Monday,  
13 whether he had any documentation about the value of his company  
14 being 4 to 8 billion dollars, and, of course, I didn't ask that  
15 because I didn't know the answer to the question, and he said,  
16 "No, there are documents," and I said, "You haven't produced  
17 any," and he said, "I don't know what's been produced."

18 well, we bent back to the Court's order, and the  
19 Court specifically ordered Plaintiffs to produce all documents  
20 reflecting any evaluations of Plaintiffs, meaning id and  
21 ZeniMax, from 2006 to present.

22 we have received nothing. So we ask that either  
23 Plaintiffs produce what they have right now or that I be  
24 allowed to call Mr. Altman back to the stand in our case so I  
25 can impeach him with his failure to produce any documents.

1 THE COURT: And who is going to respond for y'all?  
2 Mr. Hemr?

3 MR. HEMR: Yes, Your Honor.

4 Your Honor, a couple of things about that. Number  
5 one, the suggestion that we failed to produce documents is  
6 false. We've produced financial statements that can be used to  
7 derive valuations to the company.

8 In terms of value --

9 THE COURT: He said they didn't.

10 MR. HEMR: Pardon?

11 THE COURT: Your witness said they didn't. He said  
12 it about five times.

13 MR. HEMR: I disagree with that, Your Honor.

14 THE COURT: It doesn't really matter what you think.  
15 It's what I think. He said that over and over that that was  
16 not the proper valuation.

17 MR. HEMR: And Ms. Wilkinson was referring to a  
18 particular line item on the statement. The way that you would  
19 derive a value for the company from the financial statement is  
20 either -- excuse me -- is a multiple of revenues, a multiple of  
21 cash flows. Ms. Wilkinson didn't refer to that.

22 There are other documents other than documents that  
23 reflect value -- that reflect a valuation --

24 THE COURT: Yes, sir.

25 MR. HEMR: -- that Mr. Altman would rely on to form

1 his own opinion of the market value of his company. For  
2 instance, if he were to receive an inquiry from someone outside  
3 the company saying would you be interested in selling for "X"  
4 amount of money, he could rely on that.

5 This was raised -- the order that's referred to here  
6 happened in April 2016 before Mr. Altman was deposed. He was  
7 never asked about it.

8 This issue could have been raised eight months ago.  
9 I think our production is complete in this regard.

10 THE COURT: It isn't if you haven't produced them  
11 all.

12 MR. HEMR: The --

13 THE COURT: Go look.

14 Look, you come in with, in my opinion, unclean hands.  
15 Y'all didn't produce something earlier this week after I  
16 ordered it.

17 I'm going to give you till noon today to find  
18 everything there is and produce noon tomorrow, and if you don't  
19 produce something, I'm going to make a statement to the jury,  
20 I'm going to let her recall him. You have got to find it.

21 MR. HEMR: Understood, Your Honor.

22 THE COURT: Mr. Hemr, you're a good lawyer. I  
23 appreciate you fighting hard and saying you don't agree with  
24 me. I want you to understand I do appreciate your opinion.  
25 It's not that I don't value your opinion. It's just ultimately

1 I have to make these decisions, and this has nothing to do with  
2 my respecting you. I do respect you, and I respect your  
3 company, but he went over and over again about -- about what he  
4 thought and was all over the place and all those things. She  
5 needs a document, and you have got to produce it. Okay?

6 I don't -- I don't know what all that is. He said  
7 there was something. So, you know, we will find out.

8 You can value private companies --

9 MR. HEMR: You can --

10 THE COURT: -- all kinds of ways. If it's real  
11 estate, you can look at the cap rate and all kind of things  
12 like that. I don't know what all this company owns. I don't  
13 have -- I don't know that. But there are evaluations.

14 He has to go to -- I'm assuming he borrows money,  
15 goes to the bank, and he produces documents. There is bound to  
16 be things.

17 MR. HEMR: I'm thinking of two categories of things,  
18 sir, number one, the financial statements, and other than the  
19 line item on the financial statements that Ms. Wilkinson  
20 pointed to, there are various points in there, as I said, the  
21 revenues, cash flows, there is a place where there's an implied  
22 value of the stock. He can look at that.

23 THE COURT: He said the stock is not -- you know,  
24 that's not the value. We went over and over about that.

25 MR. HEMR: Yeah, and then, secondly, there is what he

1 hears from outside of the company, but he doesn't get the  
2 valuation with that.

3 THE COURT: Okay. The financial statements aren't  
4 going to cut it.

5 MR. HEMR: I understand, Your Honor. Yeah. And we  
6 will make a production.

7 THE COURT: He could if he said that's the value. He  
8 doesn't. He doesn't say that. I understand that. I think he  
9 is right about that. But there is a value. There is a value.

10 MR. HEMR: Understood, Your Honor. And we'll go  
11 back, and we will gather things up, and they will be produced  
12 by tomorrow morning.

13 THE COURT: Yeah. Even if it wasn't -- thank you.  
14 That is really what I wanted to hear.

15 I mean, if it was a big not for profit, like a bit  
16 health care system, there are ways to value it. Yes, there are  
17 alternative ways. I get that. I understand that. But this is  
18 just so all over the place, it's as if there is really no  
19 value. And I get because it's a private company. I get all  
20 that. I understand that. And he did give a range for that. I  
21 agree with that. He did do that.

22 MR. HEMR: I would just say one additional thing,  
23 sir. With regard to the -- with regard to the company itself,  
24 it's not as if the company sits down and calculates what its  
25 own marketed value is, and that would be a document that I

1 agree would be responsive to this analysis -- to this request,  
2 and there aren't such documents, and that's why they have not  
3 been produced.

4 THE COURT: There are not?

5 MR. HEMR: Yes.

6 THE COURT: There is not -- you're going to produce  
7 anything?

8 MR. HEMR: No. The kind of document I'm imagining  
9 where like a company might sit down and say, hey, what are we  
10 worth, what is our market value, that's -- that's not a kind of  
11 document that exists, and so it wasn't produced.

12 Mr. Altman was relying on other kind of things.

13 THE COURT: Well, okay. What is it Mr. Sammi is  
14 saying?

15 MR. HEMR: He -- this is the point that I made just a  
16 moment ago, which is that there are documents which you can  
17 infer valuation. One of those is the financial statements, and  
18 there are other things like sales figures.

19 THE COURT: If you say financial statement one more  
20 time, Mr. Hemr, you're going to be in trouble with me because  
21 you and I both agree he says that's not the value. He says  
22 that's not the value.

23 You know, I want him to point -- I'm fine with him  
24 getting back if they're saying I'm wrong, here's the value,  
25 boom. That's okay. That's okay.

1 MR. HEMR: Your Honor, I'm not an investment banker  
2 and --

3 THE COURT: Yeah, you've represented plenty of them.

4 MR. HEMR: I have.

5 THE COURT: Oh, I'm shocked that I knew that.

6 MR. HEMR: And here is what I learned from  
7 representing investment bankers. The way you look at a  
8 financial statement to value a company is not at the line item  
9 that Ms. Wilkerson was pointing to -- Wilkinson. Excuse me. I  
10 did that twice. I am sorry.

11 MS. WILKINSON: That's okay.

12 MR. HEMR: -- is you look at things like a discounted  
13 cash flow analysis, you look at multiples of cash flow,  
14 multiples of revenue, and you can look at other pieces of the  
15 financial statement to give you an idea what the company is  
16 worth. That's not what she asked him about, and that's one way  
17 that you could --

18 THE COURT: She asked about it whichever way you  
19 could ask it. I mean, I may be wrong. I could be wrong about  
20 that. And the court reporter is going to have it all down.

21 MR. HEMR: I'm not saying that we're not going to  
22 make a production, Your Honor, believe you me.

23 THE COURT: Look, I understand.

24 MR. HEMR: We will go back and see what --

25 THE COURT: Because the consequences of not doing

1 that are grave.

2 MR. HEMR: I understand, Your Honor.

3 THE COURT: Okay. So -- let's just get it settled.  
4 whatever it is, it is. And get that settled and let's go on.  
5 okay?

6 MR. HEMR: All right. Thank you, Your Honor.

7 THE COURT: All right. Do you want to make any more  
8 motions about the -- let's see. This is the first morning we  
9 haven't had anything about the --

10 MR. HEMR: The agreement, sir?

11 THE COURT: The indemnification.

12 MR. HEMR: would you like me to, sir?

13 THE COURT: I'm just -- this is the first morning  
14 when you haven't, Mr. Hemr, and I thought maybe something else  
15 had been raised that I missed in the expert.

16 MR. HEMR: I don't think there's anything new since  
17 yesterday, Your Honor.

18 THE COURT: I'm giving you a hard time. That's okay.  
19 But I am serious about the other. I really am and I mean what  
20 I say. It's grave. It is grave. The consequences are --

21 MR. HEMR: Understood, Your Honor.

22 THE COURT: You just can't keep dancing around.  
23 There are a number of ways to evaluate.

24 MR. HEMR: Uh-huh.

25 THE COURT: To value a business. You're a -- you

1 represent these kind of folks that do this all the time,  
2 correct?

3 MR. HEMR: That's true, Your Honor.

4 THE COURT: They properly asked for this, and it  
5 hasn't been produced. He says there are documents. Whatever  
6 there are, there are. So let's -- you know, y'all figure it  
7 out.

8 And if you find something earlier, if you're  
9 struggling with it or whatever, come to me and say, Judge, this  
10 is where we are. This is what we've got.

11 I'm not trying to be unreasonable. I'm trying to be  
12 firm.

13 MR. HEMR: Understood, Your Honor.

14 THE COURT: Okay. How come you had to fade the heat  
15 today, Mr. Hemr?

16 MR. HEMR: Pardon?

17 THE COURT: How come you were you the one that got  
18 picked to fade the heat with me today?

19 MR. HEMR: I wasn't in the room when they made the  
20 decision, Your Honor.

21 THE COURT: Mr. Hemr, you -- you are too honest with  
22 me. If that can be -- are you sure you didn't go to Baylor? I  
23 mean, come on.

24 MR. HEMR: I do have that distinction, Your Honor.

25 THE COURT: Mr. Hemr, you're a good man. I like you.

1     okay. we'll figure it out.

2             MS. WILKINSON: Your Honor, Mr. Hemr is being a nice  
3     guy.

4             I just want to -- can we have it be 9:00 tomorrow  
5     morning instead of noon because we are probably going to be  
6     closing, we hope. I mean, if they have them, unless it's  
7     impossible.

8             THE COURT: Let's see tomorrow --

9             MS. WILKINSON: First thing in the morning, Thursday.

10            THE COURT: -- is Thursday.

11            MS. WILKINSON: First thing, 8:00, if you could.

12            MR. HEMR: If we don't have them by --

13            THE COURT: Try to get it today or by 9:00 tomorrow.

14            MS. WILKINSON: Thank you.

15            THE COURT: Yes.

16            MS. WILKINSON: Thank you, Your Honor.

17            MR. HEMR: Thank you, Your Honor.

18            THE COURT: Anything else?

19            MS. WILKINSON: That's all from us.

20            THE COURT: This is actually for Ms. Keefe --

21            MS. WILKINSON: She's busy today.

22            THE COURT: -- this letter?

23            MS. WILKINSON: Yes.

24            THE COURT: Okay. How many witnesses have we got  
25     today that we've got to go through?

1 MS. KEEFE: One, two, three, four, five, six. One is  
2 video.

3 THE COURT: Can we play it like at 78 RPMs?  
4 How long is the video?

5 MR. STOJILKOVIC: 19 and a half minutes, Your Honor.

6 THE COURT: Okay. Is that your witness, the TV  
7 thing -- I mean, video?

8 MR. STOJILKOVIC: Yes, Your Honor.

9 THE COURT: Okay, Mr. Stojilkovic. There will come a  
10 time when you get to question live witnesses, I promise.

11 MS. KEEFE: He has a live witness today.

12 MR. STOJILKOVIC: I think I have three today, Your  
13 Honor.

14 THE COURT: Oh, wow. There we go. Okay. Good.

15 I do want to say on the record all the -- all the  
16 great -- I know certainly Ms. Wilkinson and Mr. Sammi are great  
17 lawyers and so are all -- all the others. I just like to see  
18 more and more lawyers, and I would like to see law firms,  
19 especially big ones, using the younger lawyers more in court.  
20 They need to be in court, not pulling documents and not getting  
21 coffee and making -- doing stuff.

22 Send that message back, will you, Mr. Sammi?

23 MR. SAMMI: I will, sir.

24 THE COURT: And you were in a big firm at some point,  
25 weren't you?

1 MS. WILKINSON: I was, Your Honor, until last  
2 January.

3 THE COURT: well, call whoever you know that's in  
4 that big firm.

5 MS. WILKINSON: That's why I left. Now all these  
6 folks get to appear in court.

7 THE COURT: well, they do. I just -- you know, I  
8 don't want to lose this skill and this craft of being in court  
9 and, you know, struggling with an irascible person like me.  
10 It's an important tool, and these lawyers need to be able to do  
11 it.

12 Okay. I was young once.

13 Mr. Philbin, are you all right?

14 SECURITY OFFICER: All rise for the jury.

15 (Jury in)

16 THE COURT: Y'all be seated.

17 Okay. We're going to call our next witness.

18 I may be a little bit testy today because I'm not  
19 going to get to go the Baylor basketball game tonight because  
20 I'm going to be working on this case. So I'm going to work on  
21 getting a better attitude, as my mother would say. Usually  
22 what she would say is are you happy, and I would say yes. And  
23 that wouldn't make -- and she'd say, well, tell your face about  
24 it. So I'm going to work on it.

25 Here we go.

1 I'll be fine. I hope y'all are all right.

2 Okay. We've got six witnesses we need to go through.

3 MS. KEEFE: Yes, Your Honor.

4 THE COURT: Ms. Keefe, you're up.

5 MS. KEEFE: Good morning, Your Honor.

6 THE COURT: Good morning.

7 MS. KEEFE: The Defendants would like to call  
8 Dr. Robert Howe to the stand, please.

9 THE COURT: There he is.

10 (Pause)

11 THE COURT: Dr. Howe, if you'll raise your right hand  
12 and be sworn.

13 (The witness was sworn)

14 THE COURT: If you'll take a seat next to me.

15 I've seen you in the courtroom. You're a pretty  
16 recognizable fellow, so you know about how to talk and the  
17 water and all your documents.

18 THE WITNESS: I will -- I will do my best.

19 THE COURT: All right. Thank you.

20 MS. KEEFE: Thank you.

21 ROBERT HOWE, DEFENDANTS' WITNESS, SWORN

22 DIRECT EXAMINATION

23 BY MS. KEEFE:

24 Q. Dr. Howe, could you please introduce yourself to the jury?

25 A. Sure. My name is Robert Howe.

1 Q. And where do you work?

2 A. I'm a professor at Harvard University. I'm the Abbott and  
3 James Lawrence Professor of Engineering at the Harvard School  
4 of Engineering and Applied Sciences.

5 Q. And what area do you teach or research in?

6 A. Well, I teach classes in mechanical engineering, robotics,  
7 and product design, and I run the BioRobotics Lab at Harvard  
8 where we work in robotics, human machine interfaces, and  
9 biomechanics.

10 Q. And I helped you put together a slide deck so that we  
11 could go through this more quickly; is that right?

12 A. That's right.

13 Q. And could you, please, just briefly, walk through your  
14 educational background for us?

15 A. Sure. I got a bachelor's degree in physics in 1979. Then  
16 I worked for a few years before I went to grad school at  
17 Stanford. And I got a master's and then Ph.D. in mechanical  
18 engineering, and I finished up in 1990.

19 Q. And what work did you do?

20 A. Well, before I went to grad school I was an engineer, a  
21 design engineer in Silicon Valley. I worked for a company that  
22 made equipment for flight simulators.

23 Q. And what are flight simulators?

24 A. Well, this is how you train pilots. These were the  
25 high-end flight simulators used by airlines and military

1 pilots, and they have a layout that looks just like the cockpit  
2 of a big airplane. And we made the equipment for the  
3 out-the-window view, so they're looking out the window and they  
4 see a scene that looks like you're flying an airplane.

5 Q. Is there anything related to VR with that?

6 A. Yeah. Flight simulators are actually an early and very  
7 successful version of VR, so with VR you want to make the user  
8 feel like they're in a different place, and they really are.  
9 And that's the whole idea behind the flight simulator. You  
10 feel as if you're flying an airplane, so when the pilot turns  
11 the controls to bank right, then the view out of the window  
12 corresponds.

13 So it gives the pilots a realistic feeling that  
14 they're flying, and they can, you know, learn how to recover  
15 from problems without crashing a real airplane.

16 Q. Do you work in virtual reality today?

17 A. Yes, we do. We've had a lot of projects across the years.  
18 I can mention one that we finished up recently, which is a  
19 virtual environment for training heart surgeons.

20 So repairing heart valves can be very tricky. It's a  
21 difficult skill to learn, and so in this system the trainee  
22 sees an image of a heart valve. They can spin it around, look  
23 at it from different directions, and they come in with virtual  
24 instruments, scalpels and sutures and all, so they can do the  
25 repair on this valve. And then, we have a mechanical simulator

1 that tests how well the new valve will work and then give  
2 feedback to the surgeon so they can get better at doing these  
3 repairs.

4 Q. Have you ever published your work?

5 A. Oh, yeah. We have over 200 publications.

6 Q. Have you previously appeared as an expert witness?

7 A. I have. I believe this is the third trial in Federal  
8 court where I've appeared as a witness.

9 Q. How much of your time do you spend working on expert  
10 witness matters?

11 A. Well, this is an interesting part of my professional life,  
12 but it's not a large part. Maybe 5 percent on average across  
13 the years.

14 Q. Do you generally work for Plaintiffs, Defendants, or both?

15 A. Both.

16 Q. Have you ever been retained by Facebook, Oculus, or any of  
17 the Defendants in this case?

18 A. No.

19 Q. Have you ever been retained by any of the law firms  
20 representing the Defendants in this case?

21 A. No.

22 Q. Did you write a report in this case?

23 A. Yes, I did.

24 Q. Did anyone help you write the report in this case?

25 A. Yes. So --

1 Q. And who was that?

2 A. Keystone Strategy.

3 Q. And how did they help you?

4 A. Well, in the report, I needed to review the state of the  
5 art, collect documents, put together references, and so on, so  
6 they helped me with all that, just as when I work in my  
7 research lab at Harvard, I have graduate students, postdocs and  
8 all who work with me.

9 They helped assemble the references, form some of  
10 thoughts. I asked them, for instance, to put together some  
11 timelines for me and helped me put together the final version  
12 of the report.

13 Q. Do you know Dr. Balakrishnan?

14 A. I do.

15 Q. And do you know if they assisted Dr. Balakrishnan with his  
16 report as well?

17 A. I believe they did.

18 Q. And you were here in court yesterday; is that right?

19 A. That's right.

20 Q. And you heard that there were three or four paragraphs in  
21 both reports that were the same?

22 A. That's right.

23 Q. Why is that?

24 A. Well, our reports are supposed to reflect our opinions and  
25 so Dr. Balakrishnan and I have, you know, many same opinions so

1 it's not very surprising that the text is the same.

2 Q. And who wrote the text in those three or four paragraphs  
3 that you saw displayed on the screen?

4 A. I wrote those.

5 Q. And do you have any problem with the fact that  
6 Dr. Balakrishnan used the same language?

7 A. No, not at all.

8 They're mostly about the history of virtual reality,  
9 you know, describing how the technology got where it is today.  
10 We can't rewrite history, so it makes sense for Keystone to  
11 help put that report together quickly to use the same  
12 recounting of history in my report and in the other report.

13 Q. How many paragraphs are in your report?

14 A. I believe it's about 350, 350 paragraphs in my report.

15 Q. And how many paragraphs were in Dr. Balakrishnan's report?

16 A. I believe it's over 500.

17 Q. Dr. Howe, are you being paid for your work here today, for  
18 your time?

19 A. Yes, I am.

20 Q. And how much is that?

21 A. It's my usual rate for this work, \$600 an hour.

22 Q. And is the amount that you're paid in any way dependent on  
23 the outcome of this case?

24 A. No, it's not.

25 MS. KEEFE: Your Honor, we'd offer Dr. Howe as an

1 expert in virtual reality especially as it relates to the  
2 physicality of robotics.

3 MR. SAMMI: No objection.

4 THE COURT: No objection?

5 MR. SAMMI: No objection.

6 THE COURT: Then he is admitted as an expert in that  
7 area.

8 Doc, I've got a couple of questions.

9 THE WITNESS: Uh-huh.

10 THE COURT: If I understand, the flight simulators  
11 are different than virtual reality in that that simulation is  
12 based upon a capsule. That's where the pilot sits. And below  
13 it are hydraulic arms that simulate moving up and down and back  
14 and forth.

15 THE WITNESS: That's correct.

16 THE COURT: So it's a little different than  
17 virtual -- it gives you that virtual reality feeling, can get  
18 you sick, but it's not based upon tricking your brain. It's --  
19 well, I guess it is still based on tricking your brain, isn't  
20 it?

21 THE WITNESS: Yeah.

22 THE COURT: But it's in a different style than doing  
23 it just through a lens?

24 THE WITNESS: That's right. It's not exactly the  
25 same in the hardware and mode of interaction, but if you think

1 of virtual reality as making you feeling like you're in a  
2 synthetic environment, you're in a place that's -- that doesn't  
3 really exist that the computer generates, then it's exactly the  
4 same. You move the controls, you move in the environment, just  
5 like you turn your head with a head-mounted display and you  
6 move in the environment.

7 THE COURT: I get it. Okay. Thanks.

8 BY MS. KEEFE:

9 Q. And, Doctor, you've also worked with head-mounted  
10 displays; is that right?

11 A. I have.

12 Q. And with respect to what the surgeons were working on,  
13 what type of displays were they using?

14 A. We used a number. We used stereoscopic monitors, so you  
15 wear 3D glasses, like going to a 3D movie, and you'd see the  
16 heart valve in 3D. And you can move it around or spin around  
17 and see the shape change.

18 Q. Doctor, you were asked to give opinions in this case  
19 regarding whether or not the technology that ZeniMax believes  
20 to be trade secrets were, in fact, trade secrets; is that  
21 right?

22 A. That's correct.

23 Q. And you focused on two of the alleged trade secrets. Are  
24 these those two secrets?

25 A. Yes, they are.

1 Q. And what were the alleged trade secrets that you focused  
2 on?

3 A. The first one is gravity orientation and sensor drift  
4 correction and the second one is predictive tracking. And  
5 that's also been referred to here as extrapolative orientation  
6 prediction, but it's the same secret.

7 Q. And can we use the exact same format to go through the  
8 technologies that you looked at that we did with  
9 Dr. Balakrishnan yesterday?

10 A. Yes, I have slides for exactly that purpose.

11 Q. And so for each alleged trade secret, we'll talk first  
12 about what is that technology, right?

13 A. That's right.

14 Q. And then we'll move on to what ZeniMax claimed  
15 specifically to be its trade secret?

16 A. Yes.

17 Q. Then we'll move on to whether or not ZeniMax's claimed  
18 steps were known before 2012; is that right?

19 A. Yes.

20 Q. We'll go to whether or not ZeniMax made its alleged trade  
21 secret public?

22 A. Yes.

23 Q. And finish off with whether or not Oculus does it the same  
24 way?

25 A. Correct.

1 Q. Okay. So for the very first one, gravity orientation and  
2 sensor drift correction, what is that problem?

3 A. Okay. So the problem is sensor drift, and we use  
4 gravity -- or the idea is to use gravity orientation to correct  
5 for that. So let me start out by talking a little about sensor  
6 drift. So here we see someone wearing a virtual reality  
7 headset.

8 And if we could, start the animation, please.

9 So as you move your head back and forth, the view  
10 that the user sees tips back and forth to match, so it looks  
11 like you're really looking out at this room that only exists in  
12 the computer.

13 However, these sensors, which track the head motion,  
14 have tiny errors to them, and so by the time you add that all  
15 up across a little time, things are not oriented straight. So  
16 here you can see the door's a little crooked and the drapes are  
17 a little crooked. And that error can be a problem because if  
18 what you see with your eyes and what you feel with your body  
19 don't agree that is the direction that's down, the direction of  
20 gravity, it can make you feel like you're not really present in  
21 that virtual world. And in addition, it can actually make you  
22 feel sick, just like seasickness or sitting in the back of a  
23 car for some people make you feel sick.

24 Q. So --

25 A. And so it's very important to make sure this kind of

1 disconnect between what you see and what you feel doesn't  
2 occur.

3 Q. And so how would one naturally think to correct for that?

4 A. Well, we can use sensors to measure gravity.

5 If I could have the next slide, please.

6 And so here is an analogy that should help make this  
7 clear. So you have a picture hanging on the wall, and you hang  
8 it up straight. But after a while, a few trucks go by, the  
9 kids slam the door and pretty soon the picture isn't hanging  
10 straight anymore.

11 Q. And so then how do you make it straight?

12 A. Well, we can use a plumb bob here.

13 I'm sorry. Can we go back?

14 We can use a plumb bob here, and this is just a  
15 string with a weight on the end, and it's the same thing that  
16 people have been using for hundreds of thousands of years to  
17 make sure that carpenters or builders get their structures  
18 straight up and down.

19 We can use that to sense the straight up and down,  
20 the gravity direction, and then we can use that to reorient the  
21 picture so that we get rid of that error and now it is hanging  
22 straight.

23 Q. So I know it sounds silly, but what do you mean  
24 "reorient"?

25 A. Oh, just change the tilt so that it is back to straight.

1 Q. So all you mean is measure the angle, figure out how far  
2 off of straight it is and then move at that angle; is that  
3 right?

4 A. Exactly correct.

5 THE COURT: So if I move my head and it's -- and it's  
6 this drift, the door is at the back and appears to angle one  
7 way or another?

8 THE WITNESS: Correct, a little bit off.

9 THE COURT: Okay.

10 BY MS. KEEFE:

11 Q. And is it easy to walk in a virtual world if you're  
12 tilted?

13 A. No. It can be confusing, and, again, it can actually make  
14 you sick if the -- if your sense of balance says one way is up  
15 and your eyes say another way is up.

16 Q. So can you show us how you actually would use this concept  
17 of a plumb bob in virtual reality in an HMD?

18 A. Sure. Next slide, please.

19 So here we've got the tilted situation. And if we  
20 can start the animation here.

21 Now we can have a sensor like a plumb bob in the real  
22 world. That will tell us which way is down.

23 Now, in the virtual world, we know which way is down  
24 because it is in the computer, and then we can adjust the  
25 computer version of which way is down so it matches the sensor

1 in the real world.

2 Q. And which -- which sensor acts as the plumb bob in the  
3 head-mounted display?

4 A. So in the head-mounted displays, they are called inertial  
5 sensors. There are a number of sensors that can be used, an  
6 inclinometer, it can be an accelerometer, and we have these,  
7 for instance, in cell phones.

8 So this is the sensor that reorients the screen. You  
9 know, when you flip your phone from one way to the other, the  
10 screen snaps around so that it's not sideways, exactly the same  
11 sensor that's used in the head-mounted displays nowadays.

12 MS. KEEFE: Can we go to the next slide?

13 BY MS. KEEFE:

14 Q. Dr. Howe, are these the steps that Dr. Dobkin identified  
15 as being in his opinion what ZeniMax's trade secrets were?

16 A. Yes, that's correct.

17 Q. Now, you didn't create these trade secret allegations, did  
18 you?

19 A. No. Dr. Dobkin studied the ZeniMax source code and came  
20 up with these as his description of what that alleged trade  
21 secret consists of.

22 Q. And we're going to walk through very quickly. In step  
23 one, obtain the most recent measurements from the head-mounted  
24 inertial sensor, what does that mean?

25 A. Well, that just says read the sensor, get a value from our

1 sensor.

2 Q. Step two, test whether the HMD is relatively still using  
3 inertial sensor measurements, what does that mean?

4 A. So the idea here is you can only use the sensors to tell  
5 you which way is down when they're holding still. So if I'm  
6 moving the head around with a head-mounted display, you know,  
7 the direction of down is changing, and so if you were to read  
8 it at that time, it might not be correct.

9 The same is true with the plumb bob. If I am moving  
10 it around, it is going to shake back and forth, it won't point  
11 straight down, but if I wait awhile it damps out, and it will  
12 tell me the correct direction for gravity.

13 Q. Step three, compute the error between measured  
14 acceleration vector and an up vector, what does that mean?

15 A. Well, that says we now have our reading from our sensor  
16 that tells us what the true down direction is. And then in my  
17 simulation I have been using these -- these orientation sensors  
18 all along. When I have added up, they're no longer quite  
19 straight. This is like my tilted picture frame. So I now  
20 calculate what is the difference between the real down vector  
21 and what my sensors have added up to say is the down vector.

22 Q. Then the final step, if sensor conditions tests pass,  
23 apply a correction to the orientation as a function of the  
24 measured acceleration and computed error.

25 what's that?

1 A. Well, that's simply fix the problem. So now you know  
2 what's the error and get rid of it, tilt the picture frame back  
3 to straight up and down.

4 Q. Dr. Howe, were you able to find these exact steps that  
5 ZeniMax alleged to be a trade secret in publications prior to  
6 2012?

7 A. Yes. In quite a few, actually.

8 Q. And do you have one of those on the next slide?

9 A. Yes.

10 Q. And what is this?

11 A. So this is a U.S. patent issued by the U.S. Government.  
12 It was issued in 1997, about 20 years ago, although they  
13 applied for that patent about three years before, in 1994. It  
14 takes the patent office a little while to issue these things.

15 Q. And the title here is Inertial Orientation Tracker  
16 Apparatus Having Automatic Drift Compensation for Tracking  
17 Human Head and Other Similarly Sized Body.

18 what does that mean?

19 A. Well, that essentially means just what we have been  
20 talking about. So it's how to use the sensors that are in a  
21 head-mounted display in order to figure out which way is down.

22 Q. And was this patent known?

23 A. Yes, it was. So --

24 Q. How do you know that?

25 A. Well, when you apply for a patent, you have to tell the

1 patent office about the prior art, the other work that's been  
2 done in the area, so that it is clear what already exists and  
3 what's new about your patent because you can only patent  
4 something that's new.

5 And so I checked the U.S. patent database, and I  
6 found 61 patent that were issued before 2011, before ZeniMax  
7 and Oculus started working together, which cite this.

8 So this says there are 61 inventors who say that they  
9 know about this work and they're building on it, they're going  
10 in the same direction.

11 And so given that there were 61 issued patents, there  
12 are clearly a lot of other people who didn't have an invention  
13 but knew about this and worked in the field as researchers at  
14 companies or whatever. So I think it is fair to say this was  
15 quite well known well before Oculus and ZeniMax got together.

16 MS. KEEFE: For the record, this is Defendants'  
17 Exhibit 0809, the Foxlin, F-O-X-L-I-N patent, and we would  
18 offer that into evidence.

19 MR. SAMMI: No objection.

20 THE COURT: Don't you usually refer to patents by the  
21 last three numbers of the patent or something like that?

22 MS. KEEFE: You can.

23 THE COURT: The '077 patent.

24 MS. KEEFE: You can definitely call it the '077  
25 patent. A lot of people also call it by the name of the

1 inventor, the Foxlin patent.

2 THE COURT: Okay. I didn't realize that. Okay.  
3 Good.

4 MS. KEEFE: Typically the person who loves the patent  
5 calls it by the inventor's name because it makes it sound like  
6 something great. So it is the Foxlin patent.

7 BY MS. KEEFE:

8 Q. Did you in this case --

9 THE COURT: Okay. You offered it, and no objection;  
10 is that right?

11 MR. SAMMI: That's correct, Your Honor.

12 THE COURT: Okay. Thanks, Mr. Sammi.

13 Admitted into evidence.

14 (Defendants' Exhibit No. 0809 received)

15 BY MS. KEEFE:

16 Q. And were you able to find each of the four steps that  
17 ZeniMax alleged to be its trade secret in the Foxlin patent?

18 A. Yes, I did.

19 Q. And can you show us where you found step one in the Foxlin  
20 materials?

21 A. Certainly.

22 So I like this patent for explaining this. As I  
23 said, there are a number of pieces of prior arts like this.  
24 This one is great because all the steps are in a single  
25 diagram. So as part of the patent, they provided this

1 flowchart that describes how it works, and each one of those  
2 steps corresponds to the boxes that are colored here.

3 So let me start with the first one, step one.

4 And it says generate angular rate signals in body  
5 coordinates with drift sensitive sensors.

6 So the drift sensitive sensors are the ones we have  
7 been talking about that add up little errors. They wind up  
8 drifted off a little bit.

9 Q. And what about step two?

10 A. And step two says has the body been still long enough?

11 So, again, you have to wait for everything to settle  
12 down, make sure you are getting the true down vector, a true  
13 gravity direction.

14 Q. And what about the third step of computing the difference?

15 A. Okay. This says compare compensating sensor signals to  
16 integrating drifting signals to generate error signals.

17 So this is the error. How much is there a difference  
18 between my sensor that tells me what is really down and what my  
19 estimate in my virtual environment says is down.

20 Q. And finally the fourth step of making the correction?

21 A. So the last box there, increment detriment updated angle  
22 signals by fractional error signals. This says change what my  
23 virtual environment is so that it matches the real world.

24 Q. Dr. Howe, you were in court yesterday, or you have been in  
25 court most of the time. You heard both of Plaintiffs' experts

1 testify; is that right?

2 A. Yes, I did.

3 Q. And did you hear them talk about any prior publications?

4 A. No. I didn't hear them talk about the state of the art  
5 and why ZeniMax's claimed invention is different from what was  
6 known before, and in the reports I didn't see this either.

7 Q. Did ZeniMax itself also make the steps that it alleges to  
8 be a trade secret public?

9 A. Yes, they did.

10 Q. And how did they do that?

11 A. If I could have the next slide.

12 So this is an image from a YouTube video that is  
13 publicly posted. It's Mr. Carmack's talk at QuakeCon 2012, and  
14 we've heard Mr. Carmack relate that he likes to disclose what  
15 he's working on, and that's exactly what he did here. He  
16 disclosed this claimed trade secret publicly.

17 Q. And what did he say?

18 A. Well, he says things like you can correct towards a clean  
19 gravity vector. So the clean gravity vector is when you're  
20 holding still.

21 He also said so we've got all the stuff in there that  
22 measures gravity and knows which way is up, and it corrects  
23 toward this.

24 So he explains how to do this clearly and publicly.

25 MS. KEEFE: And, for the record, those quotes come

1 from DX0133, the John Carmack keynote speech at 116, lines 10  
2 through 12.

3 BY MS. KEEFE:

4 Q. Dr. Howe, was there anything else that led you to  
5 believe -- I'm sorry. Strike that.

6 Did ZeniMax in its performance of spelling out what  
7 its trade secret was include any source code?

8 A. Well, no. Dr. Dobkin's report and Dr. Gleicher's report  
9 simply talk about those steps. They don't refer to the source  
10 code in describing what they claim is a trade secret.

11 Q. So in order to determine whether or not the trade secret  
12 was public, would you have to find source code in these prior  
13 publications?

14 A. No. That's not my job.

15 Q. And why not?

16 A. Well, it's not up to me to decide what ZeniMax calls a  
17 trade secret. That's up to ZeniMax, and their experts do this  
18 for them.

19 My job is to look at what they claim is a trade  
20 secret, see if, in fact, it is and meets the criteria that the  
21 attorneys I work with have explained, in particular, was it  
22 already known, did ZeniMax try to keep it secret, or did they  
23 tell other people about it, and, in addition, to ask whether  
24 Oculus used that or did they do something different.

25 Q. Did you also have another paper that you wanted to mention

1 regarding the public nature of drift correction?

2 A. Yes.

3 Q. And what's that?

4 A. So this is a paper by Favre and other colleagues, and it  
5 is called Quaternion-Based Fusion of Gyroscopes and  
6 Accelerometers to Improve 3D Angle Measurements.

7 Q. So what does that title mean?

8 A. So this says we're going to use quaternions as a way to  
9 represent motion.

10 Q. And quaternions are what?

11 A. Quaternions are a four-number sequence that describes, you  
12 know, position orientation, that kind of thing.

13 Q. Okay. And so we're going to use quaternions to do what?

14 A. Well, we're going to use it to work with these inertial  
15 sensors, gyroscopes and accelerometers, in order to measure  
16 things like virtual reality headset orientation.

17 Q. And what was the date of this paper?

18 A. It's 2006.

19 MS. KEEFE: Your Honor, this is Defendants' Exhibit  
20 1023, the Favre paper, and we would offer that into evidence.

21 MR. SAMMI: No objection.

22 THE COURT: That's admitted into evidence.

23 (Defendants' Exhibit No. 1023 received) ^ |

24 BY MS. KEEFE:

25 Q. Was there anything about the Favre paper?

1 A. I spoke with Michael Antonov. He's the chief software  
2 architect, I believe, is his title, at Oculus, and he told me  
3 this is where he got the version of this drift correction  
4 algorithm that he used.

5 So he said he found this paper by looking in the  
6 published literature, and then he went about implementing the  
7 algorithm that's described in it.

8 Q. And, in fact, did you find that Oculus's implementation  
9 was different than ZeniMax's implementation?

10 A. Yes. So as we've heard before, this implementation uses  
11 quaternions, and, in fact, Mr. Antonov after he implemented  
12 this sent it on to John Carmack and asked him to contrast and  
13 compare it.

14 Mr. Carmack's response is excerpted here from his  
15 email in response. He says, "That looks roughly similar to  
16 what I do, but my math is with matrices instead of quats (quats  
17 are probably better)." And quats are quaternions.

18 Q. And that's at Defendants' Exhibit 224.

19 was there also trial testimony in this case that  
20 confirmed that?

21 A. Yes.

22 So next slide here.

23 So this is from Mr. Carmack's testimony in my very  
24 chair where I'm sitting right now, and he was asked:

25 "That software you wrote to show your testbed on the

1 prototype, is that different than the software that does  
2 gravity orientation and sensor drift correction in the Oculus  
3 products?"

4 Q. And what was his answer?

5 A. "Yes. This is again another piece of Steve LaValle's code  
6 where he did a much more formally rigorous version of a lot of  
7 what I did both for their -- several parts of their sensor  
8 fusion code. He did just a plain flat-out better job than I  
9 did."

10 Q. Dr. Howe, did you also do a calculation to determine how  
11 long it would take a reasonable engineer in 2012 to implement a  
12 correction of sensor drift using gravity knowing what is out in  
13 the public domain?

14 A. Yes.

15 Q. And what did you find?

16 A. So it's shown here. So what I did is, as I said,  
17 essentially what Mr. Antonov did, that is, you know what the  
18 problem is. The problem was well understood for decades, and  
19 he went out, looked in the literature, found a promising paper,  
20 implemented it and tested it.

21 I said we have an engineering team doing this. We  
22 have a senior engineer, a supervisor, a programmer, and a  
23 technician, and in total I estimated it would take about  
24 28 hours to reproduce that effort.

25 Q. Do you have a summary slide, Dr. Howe?

1 A. Let me mention too I did speak with the people who  
2 actually did this implementation, both Mr. Carmack from the  
3 ZeniMax implementation and Mr. Antonov for Oculus, and they  
4 confirmed that this is roughly the amount of time they actually  
5 spent doing this.

6 Q. Thank you, Dr. Howe.

7 Do you have a summary slide?

8 A. I do.

9 Q. So in your opinion, Dr. Howe, was what ZeniMax alleges to  
10 be a trade secret in terms of the four steps for gravity  
11 orientation and sensor drift correction well known in the  
12 industry prior to 2012?

13 A. Yes.

14 Q. In your opinion, Dr. Howe, for the steps that ZeniMax  
15 claims to be a trade secret for gravity orientation and sensor  
16 drift correction, did ZeniMax itself make those steps public?

17 A. Yes, they did.

18 Q. And finally, did the parties use different methods for  
19 gravity orientation and sensor drift correction?

20 A. Yes, they're different.

21 Q. And for the last trade secret, which is predictive  
22 tracking, what is predictive tracking?

23 A. Okay. So once again, this solves a problem, and this  
24 problem is latency or delay. So let me show a few animations  
25 here to explain.

1           So if we could, run this animation.

2           So here, we see a user. We're looking down on his  
3 head, and as he turns his head, if things were perfect, then by  
4 the time he looked over at another direction, the scene he  
5 would be shown looks different. It would be what he would see  
6 if he was actually in that environment.

7 Q. And so what happens instead in an HMD?

8 A. Right. So in our real world where we have these delays in  
9 the system, as they start to move their head, the sensor is  
10 slow. There's a delay, and so by the time they move their  
11 head, they're still seeing this other direction. Things  
12 haven't changed correctly.

13 Q. And so what are we going to do about that?

14 A. Okay. Next slide, please.

15           So now, as they start to move their head, we look at  
16 how fast the sensor says things are moving, and we can predict  
17 where things will be when we show them the next picture. So  
18 now they're able to see all the way over to where their head  
19 should be pointing.

20 Q. And so how does that function? How does that work?

21 A. Okay. So we have the abstraction, the set of steps that  
22 Dr. Dobkin proposes.

23 Q. And do you have those written down?

24 A. I do.

25 Q. And so these are the steps that Dr. Dobkin claims to be

1 ZeniMax's trade secret?

2 A. That's right.

3 Q. For the first step, "get a variable prediction time  
4 parameter," what does that mean?

5 A. That says how far ahead do I have to look.

6 I know when I have to generate the next picture, so  
7 that tells me how far in advance I need to look.

8 Q. And for the second step, "compute a prediction time  
9 interval from the prediction time parameter and time of the  
10 last sensor sample," what does that mean?

11 A. Okay. So the sensor is telling me where the user's head  
12 is pointing at regular intervals, so I look from the time I got  
13 one of those a little while ago until the time that I'm going  
14 to start drawing the next picture. And I add those up, and  
15 that gives me this step two.

16 Q. And finally, for the third step, "predict the head-mount  
17 display orientation for that interval by rotating the current  
18 orientation according to the current measured angular  
19 velocity," what does that mean?

20 A. Well, that's complicated, but it's a very simple idea.

21 So I know where I need to estimate, that is, what  
22 time I need to tell you where I am, so I just look at how fast  
23 I'm moving. And I then say, well, if I'm moving this fast,  
24 here's where I'll be when I draw that next picture.

25 Q. And were you able to find all three of these steps that

1 ZeniMax claims to be its alleged trade secret in publications  
2 that predate 2012?

3 A. Yes, I was.

4 Q. Can we show one of those?

5 A. Okay. So this is a paper written in 1994 by Azuma &  
6 Bishop, and they're at the University of North Carolina. And  
7 as we've heard, that's one of the hotbeds of VR research for  
8 some decades now.

9 Q. And what's the title of this paper?

10 A. "Improving Static and Dynamic Registration in an Optical  
11 See-through HMD."

12 Q. Was --

13 A. And HMD is head-mounted display.

14 Q. And was this paper well known?

15 A. Yes, it was.

16 Q. And how do you know?

17 A. Well, again, like with patents, when us academics write  
18 papers, we have to cite the work that's been done before to  
19 give credit to the people who've done work before us and also  
20 to make clear what's new.

21 And so since this was published -- and before 2010,  
22 again, before Oculus and ZeniMax started working together, this  
23 was cited in 390 papers.

24 So clearly a lot of researchers were familiar with  
25 this work.

1 Q. And so were you able to find all three of the steps that  
2 ZeniMax alleges to be its trade secret in this paper?

3 A. Yes.

4 Q. For step one, where did you find that in the paper?

5 A. Okay. So let me try to explain this diagram here.

6 So this is the timeline, so time moves in this  
7 direction. Over here on one edge is when I got the less sensor  
8 measurements, so this is when it last told me where I was.

9 Here's where I am right now, and this is where I'm  
10 going to start drawing that next picture.

11 So the first thing is to say, well, how far in  
12 advance do I need to look in order to draw the right picture?

13 Q. And for the second step, did you find that?

14 A. Yeah. So that's going from the time of that last sensor  
15 measurement all the way over here to when I draw the next  
16 picture, and so I just add up this time across here. That's  
17 the yellow part.

18 Q. And the last step of making the prediction?

19 A. Okay. So now that I know the timeline I'm looking across,  
20 I then use this equation here to modify my quaternion, you  
21 know, where I'm going to be.

22 The blue is my angular velocity measurement, so I  
23 have to know how fast the head is turning. I perform this  
24 calculation, and then this tells me what direction the head is  
25 likely to be pointing when I draw that next picture.

1 MS. KEEFE: And just -- I'm not sure if I did this  
2 for the record, the paper that we're talking about is  
3 Defendants' Exhibit 1128, the Azuma paper, and we'd offer that  
4 into evidence.

5 MR. SAMMI: No objection.

6 THE COURT: That's admitted into evidence.

7 MS. KEEFE: Thank you, Your Honor.

8 BY MS. KEEFE:

9 Q. Did ZeniMax itself also make public its alleged trade  
10 secret regarding predictive tracking?

11 A. Yes.

12 Q. And how did they do that?

13 A. Well, here's a nice succinct version.

14 So this is an email from John Carmack to a  
15 Mr. Merrill Roller at Hillcrest Labs. So Hillcrest Labs is the  
16 company that made these little tracking sensors, and this email  
17 was about a year before Mr. Carmack started working with  
18 Oculus.

19 Q. And what did he say?

20 A. "I'll probably look into predicting ahead to cover the  
21 variable 0 to 8 millisecond gap from last sensor update to  
22 start of rendering; although, that may give subtle overshoot  
23 when coming to a stop."

24 So he's explaining there just the same algorithm. He  
25 says I'm going to look back to when I got the last sensor

1 reading. I'm going to look to when I render the next image and  
2 I'm going to predict that. So this encapsulates the trade  
3 secret very clearly.

4 Q. Did Oculus do predictive tracking in the same way that  
5 ZeniMax did?

6 A. No, they did not.

7 Q. How do you know that?

8 A. Well, first of all, once again, we know that Oculus used  
9 quaternion math and ZeniMax used matrix math.

10 In addition, Oculus used a higher level algorithm,  
11 that is, they used more complicated mathematical functions in  
12 order to get better predictions going forward.

13 Q. In fact, was John Carmack a fan of the approach that  
14 Oculus was using?

15 A. No. Just the opposite.

16 So this is an email from John Carmack to engineers at  
17 Oculus in which he says "higher order modeling can probably  
18 help some, but there are decades of generally wasted academic  
19 work in the field trying to work the problem from the wrong  
20 direction like that. Reducing the real latency as much as  
21 possible should be the top priority."

22 Q. And this is Defendants' Exhibit 698?

23 A. Yeah.

24 Q. Did you also do an estimate to see how long it would take  
25 a reasonable engineer prior to -- in 2012 to figure out what

1 they could do with predictive tracking using the materials in  
2 the public domain?

3 A. Yes. And --

4 Q. What's that estimate?

5 A. Yeah. Once again, I figured out how long it would take  
6 this engineering team to find the solution in the literature,  
7 implement it, and test it, and, again, the total turned out to  
8 be about 28 hours. And, again, I asked both the people who did  
9 the implementation at Oculus and at ZeniMax how long it took  
10 them, and this is in the right ballpark.

11 Q. Do you have a summary slide?

12 A. I do.

13 Q. So in your opinion, Dr. Howe, was the predictive tracking  
14 steps alleged by ZeniMax to be its trade secret well known in  
15 the industry prior to 2012?

16 A. Yes.

17 Q. In your opinion, Dr. Howe, did ZeniMax, itself, make the  
18 steps that it alleges to be a trade secret known and public  
19 after 2012?

20 A. Yes.

21 Q. And did ZeniMax and Oculus use different methods to  
22 accomplish predictive tracking?

23 A. Yes.

24 Q. And finally, one wrap-up slide. Dr. Howe, in your  
25 opinion, were the trade secrets alleged by ZeniMax in the steps

1 that Dr. Dobkin identified for gravity orientation and sensor  
2 drift and predictive tracking known before 2012?

3 A. Yes, they were.

4 Q. Were they made public by ZeniMax?

5 A. Yes, they were.

6 Q. And does Oculus do it differently?

7 A. Yes, they're different.

8 MS. KEEFE: I'll pass the witness.

9 THE COURT: I've got a question I want to ask you. I  
10 can understand that you can have math that would predict where  
11 my head would go. I get that. I'm not sure -- I certainly  
12 couldn't calculate it, but I can get that you can have math.

13 what I don't understand is does it have a stored  
14 photograph? How does that help if you don't know that that's  
15 what's going to be when you get to that point? I don't get  
16 that.

17 THE WITNESS: Yeah.

18 THE COURT: Does that make any sense?

19 THE WITNESS: It does. I understand. And the trick  
20 is it takes a little while to generate that image, and you want  
21 it to be the image they'll be looking at.

22 THE COURT: Right.

23 THE WITNESS: So I say -- I'm turning -- let's see.  
24 He'll be over there. I'll start drawing it now so when he gets  
25 there, I'll have it ready to show him.

1 THE COURT: How can it start drawing if it hasn't  
2 seen it yet?

3 THE WITNESS: well, it's a made-up computer  
4 simulation, and so the computer knows everything about that  
5 world.

6 THE COURT: Oh, Oh, oh. I keep forgetting this isn't  
7 a real world.

8 THE WITNESS: No. welcome to my world.

9 THE COURT: Oh. See, you couldn't do that if it was  
10 in a real world situation, right?

11 THE WITNESS: No. You'd have to wait until the  
12 camera pointed that way.

13 THE COURT: Okay.

14 MS. KEEFE: Thank you, Your Honor. We pass the  
15 witness.

16 THE COURT: Sorry. Mr. Sammi, are you ready?

17 MR. SAMMI: Yes, sir.

18 CROSS-EXAMINATION

19 BY MR. SAMMI:

20 Q. Good morning, Professor.

21 A. Good morning.

22 Q. Good morning.

23 So Professor Howe, you are getting paid \$600 an hour,  
24 right?

25 A. Correct.

1 Q. Just like Mr. -- Professor Balakrishnan and other experts  
2 in this case?

3 A. That's right.

4 Q. You were here yesterday when Professor Balakrishnan  
5 testified?

6 A. That's right.

7 Q. And you know I put some slides up about his report and  
8 your report?

9 A. That's correct.

10 Q. I think you previewed some of that in your direct  
11 testimony with the lawyers, right?

12 A. Yes.

13 Q. Okay. Let's put up slide 3, if you can.

14 That's one of them.

15 Now, the -- Dr. Balakrishnan didn't know about your  
16 report when I mentioned this to him at his deposition.

17 Did you know about Professor Balakrishnan's report,  
18 that there were sections that were copied in there?

19 A. I did not. I knew he was writing a report, obviously.

20 Q. Right. But when I deposed you, you didn't know that there  
21 were large sections of your report that were copied into his?

22 A. Well, there weren't large sections. There are four  
23 paragraphs out of 800, I believe.

24 Q. Okay. But the paragraphs contain citations to some of the  
25 prior art that you claim are underlying your reasoning as to

1 why ZeniMax's trade secrets are public, right?

2 A. No. I don't believe so, no.

3 Q. Okay. Let's take a look at -- so there are references  
4 there like mine, 1993.

5 Let's go the next slide.

6 There are references to Emura and Tachi, a national  
7 security agency, that's the history of VR that you're citing as  
8 part of the entire information about VR and why the things that  
9 ZeniMax claims are publicly known, right?

10 A. Oh, I see. So I thought you were asking is the prior art  
11 that I cite as specifically describing these alleged trade  
12 secrets --

13 Q. Right?

14 A. -- cited here.

15 And the answer to that, of course, is no. These are  
16 general references that describe the history of VR, not that  
17 specifically anticipate the alleged trade secrets.

18 Q. Okay. So did you write those sections of your report?

19 A. Yes.

20 Q. Okay. Did you have any assistance with writing it?

21 A. I believe I wrote those myself, and is an area I'm very  
22 familiar with.

23 Q. Okay. And how do you --

24 A. Let me be clear. I had other people edit it. I'm lousy  
25 with spelling and little typos and that kind of stuff, so I

1 certainly had people clean it up. I also had people come in  
2 and do the references, so I specified what should be cited, but  
3 I didn't put in the brackets and the numbers and all those  
4 details.

5 Q. Got it.

6 Did you know that -- did you know it was being used  
7 in Mr. -- in Professor Balakrishnan's report?

8 A. No.

9 Q. Okay. You're an independent expert, right?

10 A. Yes.

11 Q. And you mentioned -- did you mention -- did you work with  
12 someone -- some folks associated with Keystone?

13 A. Yes, I did.

14 Q. Okay. Do you know if Professor Balakrishnan worked with  
15 some folks named Keystone?

16 A. I was aware he was working with them, yes.

17 Q. Were you and Professor Balakrishnan both working with the  
18 same group of people helping your with your opinions and called  
19 Keystone?

20 A. I believe so, yes.

21 Q. Were the lawyers working with those people called  
22 Keystone?

23 A. Yes.

24 Q. Okay. Were the lawyers working with you and the  
25 lawyers -- I mean, the lawyers for Facebook and Oculus?

1 A. Yes. I mean, I'm obviously not a lawyer, so I relied on  
2 them to explain the law around trade secrets and that sort of  
3 thing.

4 Q. Sure.

5 other than the legal framework section of your  
6 report, lawyers were helping you with other sections of your  
7 report, right?

8 A. I don't recall.

9 Q. Okay. Now, let's take a -- let's talk about your opinions  
10 in this case.

11 Isn't it your opinion that all of the functions of  
12 current VR headsets were present in the Sutherland system in  
13 the -- in 1968?

14 A. That's correct.

15 Q. Okay. So you said all the functions of current VR  
16 headsets were present in Sutherland, and that was the picture  
17 we saw yesterday of the fellow that -- with a big thing on his  
18 head, the black and white picture.

19 A. Let me clarify. The key functions, you know --

20 MR. SAMMI: Your Honor, can you please instruct the  
21 witness to answer the question? I just want to know yes or no.

22 THE COURT: well, whether it's yes or no, I don't  
23 remember the question, but only answer the questions that  
24 you're asked, Doc. Your lawyer can get back up here and ask  
25 you if you want to clarify something.

1 THE WITNESS: Thank you, Your Honor.

2 THE COURT: You bet.

3 BY MR. SAMMI:

4 Q. Professor Howe, the Sutherland system was 1968, if I  
5 remember. I think we have a slide, slide 8?

6 A. Uh-huh.

7 Q. Okay. It's a pretty large device?

8 A. It is.

9 Q. It wasn't lightweight?

10 A. I don't think we can call that lightweight.

11 Q. One of the functions that are used by VR in the Oculus  
12 Rift and the E3 prototype is sensor drift correction, right?

13 A. That's correct.

14 Q. And Sutherland doesn't have sensor drift correction, does  
15 it?

16 A. Let's see. So I don't know about the ultrasound sensing  
17 technology. That may have had some drift correction.

18 Q. I asked you, "Does Sutherland have sensor drift  
19 correction?"

20 Answer: "Let's see. So Sutherland used positional  
21 trackers that were absolute and, thus, no, it does not have  
22 sensor drift correction"; is that right?

23 A. I'm guessing you're quoting from my deposition. You  
24 didn't explain that.

25 Q. I am quoting from your deposition, so I can read it to you

1 again.

2 A. No, no. That's fine.

3 Q. But you agree with your testimony?

4 A. Yes.

5 Q. Okay. So this doesn't have all of the functions of VR  
6 systems today, correct?

7 A. No. It has the key functions but not the specific one you  
8 mentioned.

9 Q. You wrote in your report, "It has all of the functions of  
10 current VR headsets," and now the quote is, "All of the  
11 functions of current VR headsets were present in Sutherland's  
12 system."

13 So it is not really all the functions, is it?

14 A. Well, in my report I had listed functions, and that's what  
15 I'm referring to, the key functions, the ones that make a VR  
16 headset a VR headset.

17 Q. I didn't find the word "key" there, but you're saying you  
18 wanted to refer to the "key" instead of "all"?

19 A. I believe in my report I refer to them as "key functions."

20 Q. Not in the quote that I have, and we can show it to you.

21 A. No. You excerpted a piece from later in the report.

22 MS. KEEFE: Objection, argumentative.

23 THE COURT: Overruled.

24 BY MR. SAMMI:

25 Q. In order to arrive at your opinion, you had -- in this

1 case, you had to review some materials, right?

2 A. Yes.

3 Q. You've heard about the 3515 USB device?

4 A. I have heard of it, yes.

5 Q. Yes.

6 And that was a device used by John Carmack to steal  
7 10,000 documents and code, and he plugged it into an Oculus  
8 computer and then also a laptop, right?

9 A. I'm not familiar with the details, but I believe I've  
10 heard words along those lines.

11 THE COURT: Stop.

12 MS. KEEFE: Objection, lacks foundation.

13 THE COURT: If he's heard.

14 Overruled.

15 BY MR. SAMMI:

16 Q. You were in court, right?

17 A. I wasn't here for all of Dr. Carmack's testimony, no.

18 Q. Okay. You don't know what's on that USB, right?

19 A. No.

20 Q. You never analyzed the contents of what's on that USB?

21 A. No.

22 Q. So as far as you know, the USB might contain other files  
23 of ZeniMax that relate to the trade secrets in this case or it  
24 might not, but you don't know?

25 MS. KEEFE: Objection, relevance, beyond the scope.

1 THE COURT: You mean speculation?

2 MS. KEEFE: And speculation.

3 THE COURT: Sustain speculation.

4 BY MR. SAMMI:

5 Q. It's fair to say you don't know what's on the USB, right?

6 A. That's correct.

7 Q. You would agree on that?

8 MS. KEEFE: The same objection, Your Honor.

9 THE COURT: The same ruling.

10 BY MR. SAMMI:

11 Q. Did the Defendants ever ask you to look at that?

12 A. No.

13 Q. You've heard about ZeniMax VR testbed code, correct?

14 A. Yes.

15 Q. And we've talked about it, and you've seen me hold it up.  
16 I'm referring to PX132, PX1162, PX1492, PX1429, right?

17 Those are the exhibit numbers. You know what I'm  
18 talking about when I say VR testbed code of ZeniMax, correct?

19 A. I believe so.

20 Q. Okay. And Plaintiffs allege that stereoscopic distortion,  
21 precompensation, HMD gravity orientation, and drift correction,  
22 head/neck model, face point-of-view adjustment, and  
23 extrapolative orientation prediction, among other trade  
24 secrets, are embodied in the code of ZeniMax.

25 You understand that, right?

1 A. Not sure, no.

2 Q. You don't understand that that's what the Plaintiffs are  
3 saying in this case?

4 A. Listen -- I'm sorry. Let me explain, as I did in my  
5 direct testimony, that my job that I was asked to do was to  
6 consider what ZeniMax has claimed as trade secrets.

7 MR. SAMMI: Objection, nonresponsive.

8 THE COURT: Sustained.

9 BY MR. SAMMI:

10 Q. Professor, I'm asking you whether you understand that  
11 Plaintiffs are alleging that their trade secrets, two of which  
12 you've reviewed, seven in total, are embodied in the specific  
13 source code of VR testbed as well as VR implementation code in  
14 this case?

15 A. I understand there is a -- that ZeniMax claims it's  
16 embodied in source code. You have named a specific  
17 instantiation. I will take your word for it that that's the  
18 claim.

19 Q. Okay. Do you have any reason to dispute that we're not  
20 claiming that?

21 A. No.

22 Q. Okay. And you have never analyzed this code. I think you  
23 said that on direct, right?

24 A. Of course not, no.

25 Q. And you were here yesterday when I asked Dr. Balakrishnan

1 the same question, right?

2 A. Yeah.

3 Q. Okay. So you have no analysis of your own of the source  
4 code of ZeniMax, yes or no?

5 A. No.

6 Q. Okay. Now, have you -- you have reviewed other materials  
7 in this case, right?

8 A. Yes.

9 MR. SAMMI: Let's take a look at slide 9.

10 Now, that's from PX1089, page 6.

11 BY MR. SAMMI:

12 Q. This is a slide deck from Oculus. And you've seen this,  
13 where Oculus says "The magic's in the software," right?

14 A. I don't know if I have.

15 MR. SAMMI: Okay. Let's look at slide 10.

16 BY MR. SAMMI:

17 Q. This is a slide from Dr. Dobkin, Professor Dobkin's  
18 analysis, and on the left is Doom 3 BFG code that's in here,  
19 and on the right is Oculus SD code -- SDK code, and Dr. Dobkin  
20 does a nonliteral comparison. You do understand that, right?

21 A. Yes.

22 Q. Okay. But you did not analyze any of the code on the left  
23 or on any of the code on the right, yes or no?

24 A. I did not.

25 Q. Okay. Let's talk about orientation prediction.

1           Now, we -- you talked about that. That's one of the  
2 two that you reviewed, correct?

3 A. You're referring to predictive tracking?

4 Q. Yes. Extrapolative orientation prediction or predictive  
5 tracking, if you would like me to call it that.

6 A. Yes.

7 Q. All right. Predictive tracking.

8           You testified that it would take 28 hours to create  
9 predictive tracking, right?

10 A. That's right.

11 Q. Okay. Let's take a look at -- I think this is a document  
12 that your counsel used, PX720, on the screen.

13           Let's go to the second page where this is -- at the  
14 bottom of the first page, this is from John -- sorry.

15           This is PX720, right?

16           That's right.

17           That's from Jack McCauley. You see there an email,  
18 and this is to John Carmack.

19           And if we go to the second page, it says, "One other  
20 issue" -- there you go -- "One other issue, I've been thinking  
21 about the latency, and would it not make sense to be able to  
22 predict where the head will be in the future two or three  
23 frames?"

24           Do you see that?

25 A. I do.

1 Q. That's a concept in predictive tracking, right?

2 A. Yeah.

3 Q. We've heard the analogy of throwing a football in  
4 predictive tracking. Have you been in court when that analogy  
5 has been used by witnesses as well as lawyers?

6 A. Yes.

7 Q. Okay. Now, you cited the Azuma reference for predictive  
8 tracking --

9 A. Yes.

10 Q. -- in your direct and the Azuma reference was you said was  
11 cited many times?

12 A. That's correct.

13 Q. And could Oculus engineers have just found the Azuma  
14 reference?

15 A. Yes.

16 Q. Okay. And if they found it, it would just take them  
17 28 hours to solve this?

18 A. Yes.

19 Q. Okay. Let's take look at a document that is September,  
20 October, November, December -- three months later. This is  
21 PX2010.

22 I believe this is already in evidence.

23 This is from Steve LaValle at the top, and there's an  
24 embedded email from Mr. Palmer Luckey.

25 This is dated December 19th.

1           And Mr. Luckey, who is the putative inventor of  
2     virtual reality writes, "Prediction can also be very useful,  
3     but it will need improvement. Several companies have spent a  
4     lot of time working with predictive tracking and have figured  
5     out how to use it in a nonuniform way that minimizes unwanted  
6     actions. I don't know very much about this topic. We will  
7     need to talk to outside people on this."

8           Do you see that?

9     A.    I do.

10    Q.    So how many hours between September and December in three  
11    months? I won't make you do the math, but that's many, many  
12    more times hours than 28, right?

13    A.    Yes.

14    Q.    Okay. And I have a board, if we could get it up, and I  
15    could put that on the board. I believe when I used the board  
16    with Professor Balakrishnan, you came around and you saw the  
17    board?

18    A.    I certainly couldn't read the board.

19    Q.    Okay. But you saw what I was doing there?

20    A.    There was a board, yes.

21    Q.    Okay. Now, why wouldn't Oculus developers just go look at  
22    the Azuma reference and solve predictive tracking?

23           You used the word "simple" in your direct. If it's  
24    so simple, they can just solve it.

25    A.    Well, my understanding from speaking with them is that

1 they did. They implemented it in fairly short order. I asked  
2 Mr. Antonov how long it took him, and, as I recall, he said one  
3 to two weeks to implement, find it, implement and -- no, I'm  
4 sorry. That was gravity and drift correction.

5 For predictive tracking, I believe he said it took  
6 him a couple of days.

7 Q. He said it took him a couple of days for predictive  
8 tracking?

9 A. Yes.

10 Q. Okay. Let's see here. Predictive tracking.  
11 December 28th. November 18th.

12 why would it take -- I'm going to mark it in just a  
13 second -- why would it take two months for Oculus engineers to  
14 still be working with predictive tracking if he did it in a  
15 couple of days? Do you know?

16 MS. KEEFE: Objection, lacks foundation.

17 THE COURT: Sustained.

18 BY MR. SAMMI:

19 Q. You spoke to Mr. Antonov, right?

20 A. I did.

21 Q. Now, has Oculus ever used a clean room?

22 A. I don't know.

23 Q. Did you ask?

24 A. No.

25 Q. Do you know what a clean room is?

1 A. I heard it described in court.

2 Q. Okay. And that's the only time you've ever heard about  
3 the concept of a clean room was in court?

4 A. Well, except for this concept of a semiconductor  
5 fabrication or medical device fabrication facility.

6 Q. Sure, except for that one. The concept of a software  
7 clean room?

8 A. That's correct.

9 Q. Okay. So this case has been pending for how many years?

10 A. I gather two years.

11 Q. Yeah. Two and a half years.

12 So if a company like Oculus, Mr. Antonov and those  
13 working at Oculus get sued by ZeniMax, in two and a half years,  
14 they could have just had somebody rewrite it who has no  
15 exposure to Carmack or no exposure to ZeniMax's code, right?

16 would that make sense?

17 THE COURT: Stop.

18 MS. KEEFE: Objection, Your Honor. Incomplete  
19 hypothetical, calls for speculation.

20 THE COURT: Sustained.

21 BY MR. SAMMI:

22 Q. In your expert opinion, sir, wouldn't one way to avoid an  
23 allegation of trade secret misappropriation would be to just  
24 clean room the code?

25 MS. KEEFE: Same objection, Your Honor.

1 THE COURT: I'll let him answer that.

2 Overruled.

3 THE WITNESS: Yes.

4 BY MR. SAMMI:

5 Q. Okay. And do you know whether Oculus has ever done a  
6 clean room?

7 A. I don't know.

8 Q. And did you inquire?

9 A. No.

10 Q. Okay. By the way, I asked you -- we were talking about  
11 predictive tracking. I asked you, "Can you name" -- and this  
12 is at your deposition -- "a single VR system today" -- this was  
13 at your deposition -- "that uses predictive tracking  
14 technology?"

15 okay?

16 And your answer was, "I think I may need to amend my  
17 previous response. I'm not certain that there are current  
18 systems."

19 Do you remember that?

20 THE COURT: Are you trying to impeach him with his  
21 deposition?

22 MR. SAMMI: Let me ask the question this way.

23 BY MR. SAMMI:

24 Q. Do you recall whether you were able to identify any  
25 current virtual reality system that uses predictive tracking

1 when I asked you the question at your deposition?

2 A. Yes.

3 THE COURT: Stop.

4 MS. KEEFE: I'm going to object, Your Honor, to the  
5 way he's doing this. If he's going to read quotes from the  
6 deposition, I need to know the --

7 THE COURT: He hasn't read the quotes yet. He's  
8 asking questions.

9 Overrule that. He's answered. It's in.

10 Okay. Next question.

11 MR. SAMMI: Sure.

12 BY MR. SAMMI:

13 Q. Are you -- do you recall not being able to mention any VR  
14 system currently that uses predictive tracking?

15 A. Yes.

16 Q. You recall not being able to, right?

17 A. Yes.

18 Q. Okay. Let's talk about gravity for a second. We talked  
19 about gravity. What's the total time for gravity? Do you  
20 recall?

21 A. I believe the estimate was about 28 hours.

22 Q. 28 hours.

23 Okay. So that's another 28 hours.

24 That's half a week if you have more than one person  
25 or even one person?

1 A. Sure.

2 Q. Okay. Now, let's take a look at some documents.

3 I want to start with PX489. We have seen this  
4 before. I can use this on the ELMO unless we have a slide.

5 And we talked a lot about this in the direct where  
6 you said this is the plumb bob and, you know, thousands of  
7 years people have known just the plumb bob will fix -- you just  
8 have to find out where gravity is.

9 Do you remember that?

10 A. Yes.

11 Q. Okay. Now, this is -- this is Mr. Antonov writing, "Can't  
12 get the damn gyro and gravity data to merge."

13 Do you see that?

14 A. Yes.

15 Q. So Mr. Antonov could have just looked at the YouTube  
16 video, right? That's -- you cite the YouTube video as  
17 disclosing the secret of how to reorient gravity in code  
18 specific to virtual reality, right?

19 A. Yes.

20 Q. So Mr. Antonov could have just gone to YouTube and watched  
21 John Carmack say that one sentence and then be able to do it in  
22 the code?

23 A. Yes.

24 Q. Okay. So then a couple of lines down, Mr. Iribe says "why  
25 don't you email Carmack?"

1 Do you see that?

2 A. Yes.

3 Q. And then Mr. Antonov writes back, "Basically at this point  
4 I'd need his code. I've been determined to figure it out  
5 myself."

6 Do you see that?

7 A. I do.

8 Q. So Mr. Antonov, someone who is determined to figure it  
9 out, didn't bother going to YouTube, do you know?

10 MS. KEEFE: Objection, Your Honor, calls for  
11 speculation.

12 THE COURT: Sustained.

13 BY MR. SAMMI:

14 Q. Did you ask Mr. Antonov if he went to YouTube and watched  
15 the video?

16 A. No. He told me he got this from a paper.

17 Q. Got it from the paper. That's right.

18 Let's start from the patent first. You had a patent,  
19 the Foxlin patent, right?

20 A. Yes.

21 Q. Okay. First of all, is there any allegation, do you know,  
22 that ZeniMax's technique that's for gravity orientation  
23 infringes this patent in any way?

24 A. Well, the patent has expired, so it can't be infringed.

25 Q. How about when it was in play? You said all the steps are

1 found in the patent, so wouldn't that mean ZeniMax's gravity  
2 orientation infringes this patent?

3 MS. KEEFE: Objection, Your Honor, calls for legal  
4 collusion. We didn't talk about the claims.

5 THE COURT: Sustained.

6 BY MR. SAMMI:

7 Q. Didn't you say in your direct that every element of  
8 gravity correction trade secret, as ZeniMax claims, is found in  
9 the Foxlin patent?

10 A. Yes.

11 Q. And the Foxlin patent was cited how many times? 61?

12 A. 61, yes.

13 Q. 61.

14 Now, did Mr. Antonov just go and look at the Foxlin  
15 patent?

16 A. No. He used the Favre reference.

17 Q. That's the -- is that the one -- the Favre paper, the  
18 quaternion based fusion, right?

19 A. Correct.

20 Q. Is there any source code in the Favre paper?

21 A. No.

22 Q. And how long is it? A page and half?

23 A. Yes.

24 Q. Okay. So Mr. Antonov could have used this -- you said  
25 that Mr. Antonov told you he used this?

1 A. Yes.

2 Q. Okay. Let's take a look at PX1509.

3 This is another email from Mr. Antonov after he's  
4 asked for the code. Let's go down to "I have a question."

5 "I have a question about orientation adjustment in  
6 Doom 3. How do you decide where up and down is?"

7 That is September 8th, right?

8 I'll -- take a look at the date.

9 That's September 8th, okay?

10 A. Yes.

11 Q. Okay. Do you know if Mr. Antonov found the Favre paper at  
12 that point?

13 A. I'm unfamiliar with the timeline, if that's what you're  
14 asking.

15 Q. Yeah. That's exactly what I'm asking. You had  
16 conversations with Mr. Antonov, and he told you that he used  
17 the Favre paper. When?

18 A. Well, you showed a text which indicates he was  
19 implementing the Favre paper at that time, so on that date I  
20 presume.

21 Q. So you think the texts that we saw was him implementing  
22 the Favre paper?

23 A. Yes.

24 Q. So why would he ask to get Carmack's code and say,  
25 basically, I need Carmack's code? I've been trying to figure

1 it out myself.

2 He didn't say basically I need the Azuma reference or  
3 I need to go to the library.

4 MS. KEEFE: Objection. Misstates document and  
5 testimony.

6 THE COURT: Overruled.

7 THE WITNESS: I'm sorry. Can you repeat the  
8 question, please?

9 BY MR. SAMMI:

10 Q. Sure.

11 He said, he being Mr. Antonov, said "Basically at  
12 this point I need Carmack's code." He didn't say I need the  
13 Favre paper or I need to go to the library, correct?

14 A. Correct.

15 Q. Okay. Let's take a look at a November 26 document,  
16 PX1747.

17 Now, this is November 26th, which is -- that was  
18 September 8th. November 26th, that's almost two months later.  
19 Mr. Iribe to Mr. Carmack "We're tweaking gravity correction and  
20 wanted to know how you implemented it in the Rage/Doom demo.  
21 Can you describe what you're doing?"

22 Do you see that?

23 A. I do.

24 Q. Okay. Well, they got the Favre paper. They don't need to  
25 know how -- know what -- how Carmack does it in his code, do

1 they?

2 A. Let's see. So I believe that it had already been  
3 implemented by this time.

4 Q. Okay. So -- and they're asking for no reason?

5 A. Well, you can always make things better. And, in fact,  
6 they did go on to use a much more sophisticated technique in  
7 their future implementations.

8 BY MR. SAMMI:

9 Q. Okay. But do you know if Oculus was in a hurry trying to  
10 get its SDK out at this point?

11 A. I'm sure they were.

12 Q. Okay. Now, let me ask you about E3. Do you know what E3  
13 is?

14 A. Yes.

15 Q. Okay. E3 was in 2012, correct?

16 A. I don't recall the date.

17 Q. Okay. I'll let you know that it was in June 2012. I  
18 think that counsel will agree that was the date, okay?

19 So I asked -- I'm going to ask you before the middle  
20 of 2012, let's say 2011, are you aware of any HMD headsets that  
21 were on the market that had significantly reduced latency and  
22 that were commercially viable?

23 A. Well, by commercially viable, let me get a clarification.  
24 I take it you mean you can make money selling them to  
25 consumers.

1 Q. well, let's talk about that for a second.

2 The Sutherland is not commercially viable, right?

3 Because that was in a lab and it was the size of a room, right?

4 A. Correct.

5 Q. How about you and me going to a store and next to a  
6 PlayStation, there's something on the shelf that we could buy,  
7 let's call that commercially viable. Is that --

8 A. So commercially available.

9 Q. Isn't that viable, too, because it's selling? Otherwise,  
10 it wouldn't be on the shelf.

11 A. well, people lose a lot of money selling things, and  
12 it's -- the jury's still out, if you'll excuse me, about  
13 whether you can make money selling VR headsets.

14 Q. Okay. So what term do you want to use? Do you want to --

15 I'm just trying to ask you if we can agree on some  
16 term where it's VR that's not in a lab. It's not a flight  
17 simulator that costs \$100,000. It doesn't have scaffolding  
18 that has cameras all around. It's something that you can walk  
19 into a store and buy reasonably.

20 what word do you want to use?

21 A. Commercially available.

22 Q. Commercially available.

23 Okay. So before the middle of 2012, say the year  
24 2011, are you aware of any HMD headsets on the market that had  
25 significantly reduced latency and were commercially viable --

1 or available I should say?

2 A. I am not aware of any.

3 Q. You're not aware of any? You're not aware of any?

4 A. I'm sorry. Could you repeat the question?

5 Q. Sure.

6 Are you aware of any virtual reality headsets before  
7 the middle of 2012 -- it could be 2011, it could be 2010, it  
8 could be 2009 -- that were -- that had significantly reduced  
9 latency and were commercially available?

10 A. Well, I'm not sure what significantly reduced means.  
11 Certainly everybody who's built these tries to reduce latency.

12 Q. Can you think of any?

13 A. Well, as I say, in going back to the 1990s, I used a  
14 headset, the EyePhone, which was commercially available, and I  
15 had, you know, moderate latency, not too bad.

16 So I need more information to, you know, answer the  
17 question.

18 Q. Okay. Do you -- do you read any documents about the  
19 acclaim that happened at E3 after the prototype was debuted at  
20 ZeniMax's booth?

21 A. Yes.

22 Q. Okay. Do you know if that any sort of acclaim accompanied  
23 the thing you just described? And when you said EyePhone, it's  
24 not one of these?

25 A. No. Sorry. It is called an EyePhone. It's called E-Y-E

1 phone. In the 1990s, nobody had ever heard of Apple iPhones at  
2 that point.

3 Q. And you don't remember any acclaim like that?

4 A. Huge press.

5 Q. Okay. And are you --

6 A. A gigantic splash.

7 Q. Did it survive?

8 A. No. It was not commercially viable.

9 Q. Okay.

10 A. Yeah.

11 Q. So other than -- so it's not commercially viable. So  
12 that's a no, right?

13 A. That's a no.

14 Q. Got it. Okay. Let me just wrap up here for second, sir.

15 Did Oculus -- didn't Oculus have a team of engineers,  
16 not just Mr. Antonov?

17 A. Well, they started small. Now, I understand they have a  
18 very large team.

19 Q. Right. And we've heard from some folks, like Mr. LaValle,  
20 Mr. Nirav Patel, and others.

21 who else did you talk to at Oculus?

22 A. Well, let's see. I'd need to look at my report to give  
23 you an exhaustive list. I spoke with Mr. Carmack. I spoke  
24 with Mr. Antonov. I can't recall -- I'm sorry. I can't recall  
25 off the top of my head. I can consult my report, if that would

1 help.

2 Q. But the ones you can recall, and Mr. Carmack, who's  
3 sitting here today, and Mr. Antonov, who's not here?

4 A. That's right.

5 Q. Okay.

6 MR. SAMMI: Pass the witness.

7 Before I do, Your Honor, I apologize. Let me just  
8 move some documents into evidence, if we can.

9 I'd like to move the documents into evidence referred  
10 to that were on the preadmitted list PX1509, PX2010, and  
11 PX1747.

12 THE COURT: They need to know what they are.

13 MS. KEEFE: I need to see it so I know.

14 MR. SAMMI: Yes. I'll give you copies right now.

15 We can put it on the record later, Your Honor, or  
16 would you want to do it right now? These are -- were on the  
17 preadmitted list. I apologize.

18 THE COURT: You mean they've already been agreed to?

19 MS. KEEFE: No objection. I --

20 MR. SAMMI: They're on the preadmitted list, and I  
21 mentioned them.

22 THE COURT: Preadmitted agreed to?

23 MR. SAMMI: Yes.

24 MS. KEEFE: I just want to -- just -- if I can just  
25 see them, Your Honor, I'm sure we can wrap this up real

1 quickly.

2 THE COURT: Well, if they're already agreed to, all  
3 you do is make a reference to them and they're in.

4 MR. SAMMI: Okay.

5 MS. KEEFE: It looks like they are all preadmitted,  
6 yes.

7 THE COURT: Then, they're in.

8 MR. SAMMI: Thank you, Judge.

9 THE COURT: That's all you needed to do.

10 (Plaintiffs' Exhibit Nos. PX1509, PX2010, and PX1747  
11 received)

12 MR. SAMMI: Thank you.

13 THE COURT: Okay. Ms. Keefe, how long is your  
14 redirect?

15 MS. KEEFE: I have two questions.

16 THE COURT: Long questions, short questions?

17 MS. KEEFE: Short questions.

18 THE COURT: Okay.

19 REDIRECT EXAMINATION

20 BY MS. KEEFE:

21 Q. Dr. Howe, did ZeniMax's descriptions of its alleged trade  
22 secrets as presented by Dr. Dobkin include any mention of  
23 source code?

24 A. No.

25 Q. Is there actually another expert in this case who did

1 analyze ZeniMax's source code and compare it directly to  
2 Oculus's source code for the Defendants?

3 A. Yes. My understanding is Barbara Frederiksen-Cross did  
4 that analysis.

5 Q. And she'll be testifying later?

6 A. My understanding.

7 MS. KEEFE: Thank you.

8 MR. SAMMI: No further questions. Thank you,  
9 Professor.

10 THE WITNESS: Thank you.

11 THE COURT: Thanks, Doc. You can step down.  
12 Take a 10-minute break.

13 we're going to really try to -- everybody go to the  
14 bathroom fast.

15 Don't talk about the case.

16 SECURITY OFFICER: All rise.

17 (Jury out)

18 (Recess at 10:28)

19 THE COURT: Okay. Here we go. Next.

20 Mr. Lisy, you're up.

21 MR. LISY: Good morning, Your Honor.

22 THE COURT: It's great to see you.

23 MR. LISY: It's good to see you as well. Thank you.

24 THE COURT: Is Mr. Hemr still alive back there?

25 MR. LISY: I think he is.

1 THE COURT: Okay. Let's bring them in.

2 And you've got your witness here in the courtroom? I  
3 see him.

4 MR. LISY: Yes.

5 THE COURT: Just kind of turn this way. You can look  
6 at the jury and then, in a minute, Ronnie will swear you in,  
7 okay?

8 MR. WILLITS: Yes, Your Honor.

9 THE COURT: And you're going to have to talk right  
10 into the microphone right here when you get up there, okay?

11 MR. WILLITS: Yes, Your Honor.

12 (Pause)

13 SECURITY OFFICER: All rise for the jury.

14 (Jury in)

15 THE COURT: Sorry. That break went longer than I  
16 thought. Y'all be seated.

17 Thank you.

18 Mr. Willits, raise your right hand.

19 (The witness was sworn)

20 THE COURT: All right. Take a seat next to me.

21 And, for the record, call your next witness.

22 MR. LISY: Plaintiffs call Timothy Willits.

23 THE COURT: Okay.

24 THE WITNESS: Good morning.

25 THE COURT: Have you got water?

1 THE WITNESS: Yes, Your Honor.

2 THE COURT: Okay. Good.

3 (Pause)

4 THE COURT: It's on.

5 MR. LISY: Great.

6 TIMOTHY WILLITS, DEFENDANTS' WITNESS, SWORN

7 DIRECT EXAMINATION

8 BY MR. LISY:

9 Q. Good morning, Mr. Willits.

10 A. Good morning, sir.

11 Q. Would you introduce yourself to the jury, please?

12 A. Hello. My name is Tim Willits.

13 THE COURT: Whoa, whoa, whoa. We're going to have to  
14 train you, Mr. Willits, about how to work on the microphone.

15 You're going to have to do it kind of across like  
16 this, like Bruce Springsteen would, okay?

17 THE WITNESS: Got it, Your Honor.

18 THE COURT: Okay.

19 THE WITNESS: Sorry about that.

20 THE COURT: All right. Here we go.

21 BY MR. LISY:

22 Q. Do you want to give it another shot?

23 A. Hello. My name is Tim Willits, and I am the studio  
24 director at id Software.

25 Q. Mr. Willits, how long have you been working at id Software

1 for?

2 A. I have been at id Software since 1995, so like 21 years.  
3 It's very exciting.

4 Q. Is that the first job that you had after college?

5 A. Yes, yes, yes, I was -- right out of college I came to id  
6 Software and, you know, I'm very blessed to, you know, work in  
7 the same company for so long.

8 Q. Okay. And were you working at id, Mr. Willits, at the  
9 time that ZeniMax acquired it in 2009?

10 A. Yes. Yes, I was.

11 Q. Could you give the jury a sense of what was happening at  
12 id around the time of the acquisition and what the culture at  
13 id was like after the acquisition?

14 A. Okay. So in 2008, 2009, we wanted to expand the studio,  
15 because we had, you know, more franchises, game franchises than  
16 really people.

17 THE COURT: We're still not able to hear you very  
18 well.

19 THE WITNESS: Oh, I'm sorry, Your Honor. There we  
20 go.

21 A. So there we go.

22 So, yes. So in 2008, 2009, we wanted to expand the  
23 studio, and, you know, growing is very difficult, so, you know,  
24 we looked for publishers that we could partner with that could  
25 help us grow our studio that would help us with our business

1 and that would be a culture fit.

2 BY MR. LISY:

3 Q. And can you tell us about what the culture at id was like  
4 after ZeniMax acquired the company?

5 A. So one of the reasons why we decided to work with ZeniMax  
6 is that, you know, we felt that, you know, they were aligned  
7 with us, not only how they did business but also our culture.

8 So id Software, we're always -- we've always been  
9 really small, and we have a small team mentality. So for us  
10 it's -- you know, it's the people first. We work long hours  
11 together, so it's like a family. So when we were looking for  
12 publishers, you know, we -- we were very happy that ZeniMax,  
13 you know, their culture fit with ours.

14 Like, for instance, I'm not sure if you already know  
15 this or not, but you know that square in the ZeniMax logo,  
16 well, part of the ZeniMax motto is that we turn right corners  
17 or square corners, sorry. And that's because, you know, the  
18 company tries to do the right thing. We try to have integrity  
19 with our employees, and we felt that was a good fit for us.

20 Q. And do you know Mr. Altman?

21 A. Yes, sir.

22 Q. Do you have a relationship with Mr. Altman?

23 A. Yes, yes. I feel that I have a very good relationship  
24 with Robert. I worked with a number of different publishing  
25 companies, big companies, and, you know, I feel that I have

1 direct access to Robert, which is very unique with other CEOs,  
2 and I think that the other employees also feel that way as  
3 well.

4 Q. Did you work with Mr. Carmack as well?

5 A. Yes, yes, yes. So John was always at the company. He was  
6 the founder, so I have worked with John the whole time that he  
7 was there.

8 Q. Did you ever see Mr. Carmack working on virtual reality at  
9 id?

10 A. Yes, yes. And that's a big -- that's a big question.  
11 Yes. So I saw John working on -- you know, we have the three  
12 kind of pieces, the three foundations of what modern VR is, you  
13 know, which, of course, is the hardware. Then there's the  
14 system, the platform that makes it work, and then we have our  
15 game content.

16 So during, you know, 2010, 2011, you know, I saw John  
17 working with different components, different pieces. I walked  
18 by, I witnessed John working on solving some really difficult  
19 problems, and then, of course, the game content. You know,  
20 that's something that we definitely worked very closely  
21 together on.

22 Q. Did there come a time when it seemed to you that  
23 Mr. Carmack had made a breakthrough on virtual reality?

24 A. Yes. So, as you probably already know, there's some very  
25 complex issues, and, you know, John is very good at solving

1 problems.

2 And from what I witnessed, you know, really in the  
3 spring of 2012, that timeframe, you know, some of those really  
4 difficult problems, you know, he cracked, and it was -- it was  
5 really cool.

6 Q. And during the timeframe that you're mentioning, had  
7 Mr. Carmack, to the best of your knowledge, been contacted or  
8 have any contact with Mr. Luckey?

9 A. Yes. So it's -- my understanding is that, you know, John  
10 first contacted Palmer Luckey in May, May, which was obviously  
11 after -- after the spring.

12 Q. And was there a time prior to that when you felt that  
13 Mr. Carmack had achieved the breakthrough that we talked about  
14 a moment ago?

15 A. Yes, yes, yes. Like I said, very, very complex problems.  
16 And, you know, John had solved, you know, a lot -- many of the  
17 issues. I mean, he just -- he brought something that was so  
18 difficult to life, and there's actually -- there's a picture of  
19 me. I'm not sure if you've seen it. It was tweeted from us.  
20 It was in March. And you can see me, and I have -- I have one  
21 of John's mad scientist headsets on. So, yes, it was around  
22 that time.

23 Q. Okay. And are you generally familiar with the work that  
24 Mr. Carmack was doing on virtual reality at the time in 2012?

25 A. Yes, yes. So, again, I worked closely with John. We've

1 always been a small group. So, again, I saw John, you know,  
2 working with, you know, numerous pieces of hardware.

3 You know, when John solves a problem, he gets very  
4 excited, and he says, "Hey, you guys have got to come check  
5 this out."

6 So there are many times when he would show us new  
7 things, and I worked closely with him on the game content as  
8 well.

9 Q. And at that time -- so in the spring of 2012 -- did you  
10 have a view as to who owned the contributions and the work that  
11 Mr. Carmack was doing on virtual reality?

12 A. Yes, yes, yes. So the stuff that we do at id we own, and  
13 I witnessed John working, you know, on doing amazing things,  
14 and it was my belief that, yes, we own that work.

15 Q. Did you ever have a different belief between that time and  
16 as you're sitting here right now?

17 A. No, sir, no.

18 Q. Did you think that the work that John was doing on virtual  
19 reality was known outside of id Software at that time?

20 A. So early -- so a lot of the work that, you know, John had  
21 done at that time was -- was proprietary, was stuff that we did  
22 internally. But once he started to, you know, unlock a lot of  
23 these problems and solve these issues, we were very excited.

24 So we would tease stuff to the press, like that, like  
25 that Twitter picture was definitely something where, you know,

1 it made our fans kind of very excited about, you know, what we  
2 were working on.

3 Q. And the jury has heard a lot of testimony over the last  
4 couple of days about the negotiations that id has had with  
5 oculus.

6 Are you generally familiar with those discussions?

7 A. Yes. So just let me explain real quick.

8 You know, I -- I deal with the creative side of the  
9 business, so I wasn't necessarily in those discussions, but --  
10 but I was definitely very, you know, aware of it, yes.

11 Q. And who, to your knowledge, was the point of contact at id  
12 for those discussions?

13 MS. KEEFE: Objection, Your Honor. He just said he  
14 wasn't involved in them, so any testimony about them is going  
15 to be hearsay.

16 THE COURT: Sustained.

17 BY MR. LISY:

18 Q. Even if you weren't involved with them, did you have  
19 personal knowledge of the fact of discussions happening?

20 MS. KEEFE: The same objection, Your Honor. He just  
21 said he wasn't involved. Hearsay.

22 THE COURT: Sustained.

23 BY MR. LISY:

24 Q. Okay. Mr. Willits, can you tell us, generally, is  
25 intellectual property important to id Software?

1 A. Yes. So -- so we create technology, and we create games,  
2 and that's our -- that's our crown jewels. You know, our  
3 business, you know, the people that work at id Software, that's  
4 our job.

5 So, you know, everything we do from technology to our  
6 game design is -- is really important to us.

7 Q. Okay. And does id Software have policies and procedures  
8 around checking in source code to id's source code repository?

9 A. Yes. So one of the things that we asked of our employees  
10 is that every day -- at the end of the day they check in their  
11 work. So that's our coders and our artists. So we ask that  
12 we -- so we know where it is. We can keep it safe. And so  
13 people can regularly check in what they do.

14 Q. And earlier you said that you worked with Mr. Carmack. Do  
15 you know whether Mr. Carmack would run afoul of those policies  
16 and procedures?

17 MS. KEEFE: Objection, lacks foundation.

18 THE COURT: Sustained.

19 MR. LISY: Okay.

20 BY MR. LISY:

21 Q. Are you familiar with Mr. Carmack's work writing source  
22 code for id?

23 A. Yes, sir.

24 Q. Could you tell the jury how you know about that?

25 A. So, again, I worked with John for, you know, almost 20

1 years, and it's a very small team. And, you know, John is our  
2 principal architect. He's -- he's the guy that really, you  
3 know, invented the first-person game and all the technology.

4 And because I'm one of the senior leaders in the  
5 studio, we have meetings, and we go over what people are  
6 working on. John, you know, talks about code. And in college  
7 I was a computer science major, so I don't necessarily code  
8 now, but I have an understanding of, you know, the basic  
9 technologies.

10 Q. Okay. And in terms of Mr. Carmack's checking source code  
11 in and out, is that something that you have personal knowledge  
12 of?

13 A. Yes, yes.

14 Q. Okay. And could you tell us about Mr. Carmack's  
15 policies -- excuse me -- could you tell us about Mr. Carmack's  
16 practices in that regard?

17 A. Yes.

18 MS. KEEFE: Objection, lacks foundation.

19 THE COURT: Sustained.

20 BY MR. LISY:

21 Q. Okay. If Mr. Carmack were to have created source code on  
22 a laptop owned by id and did not check that source code into  
23 the id repository, is there any way for you at id to know what  
24 that source code was?

25 MS. KEEFE: Objection.

1 THE COURT: Sustained.

2 BY MR. LISY:

3 Q. Okay. There's been some evidence in the case,  
4 Mr. Willits, that leading up to his departure at id Mr. Carmack  
5 took about 10,000 emails with him over -- after he left id.

6 And what I'm going to ask you is, are you familiar  
7 with Mr. Carmack's practice of using email at id?

8 A. Yes. Yes, I am.

9 MS. KEEFE: Objection. Lacks foundation, calls for  
10 speculation.

11 THE COURT: Sustain that.

12 The jury is instructed to disregard the last answer.

13 BY MR. LISY:

14 Q. Is it something that would be concerning to you if  
15 Mr. Carmack took 10,000 emails from id after he left?

16 MS. KEEFE: Objection.

17 THE COURT: Sustained.

18 MR. LISY: I'll move on.

19 BY MR. LISY:

20 Q. Who at id would be best positioned to review any software  
21 development kit that may have been sent from Oculus?

22 A. The best person would be John Carmack.

23 Q. Okay. Is there anybody else at id in the 2012-2013 time  
24 period who would be as adept as Mr. Carmack in doing that?

25 A. Because John created the technology, obviously, he would

1 be the best person to -- to evaluate that, yes.

2 Q. Okay. Now, during the time that Mr. Carmack was at id,  
3 did he have discussions with hardware manufacturers?

4 A. Yes, yes, he did.

5 Q. Okay. And do you do project planning at id?

6 A. Yes, sir, I do.

7 Q. And could you give the jury just a brief description of  
8 what project planning is?

9 A. So when we start out -- sorry. So when we start out on a  
10 new project, as studio director and creative director before  
11 that, it is my job to work with the individual teams, you know,  
12 the programmers, artists, and designers, on creating the  
13 roadmap for, you know, how we're going to go from the  
14 technology to the game design to -- and then, you know, which  
15 departments and people would work on things. It is very  
16 standard, and it is a way that we kind of plan our game  
17 development.

18 Q. And does id release games on multiple platforms?

19 A. Yes, yes, we do.

20 Q. Is that done at the same time or at different times?

21 MS. KEEFE: Objection, Your Honor. Lacks foundation.

22 THE COURT: He may know that.

23 Overruled.

24 THE WITNESS: Yes, yes. So we -- so when we launch  
25 our new games, they are multi-platform. So, for instance, last

1 year we shipped the newest Doom game, and it was Xbox One,  
2 PlayStation 4, NPC, and we do that at the same time.

3 BY MR. LISY:

4 Q. And can you tell the jury very briefly what the process is  
5 for making a game work on the Xbox One as opposed to making it  
6 work on the PlayStation One?

7 A. Yes, yes. Without going into too much detail, the  
8 foundation, the core technology is -- works across all  
9 platforms. That's the real hard part.

10 And then at the end of the project, then, you know --  
11 we will assign someone to make it work on the Xbox and the  
12 PlayStation and the PC and those types of platforms. It is not  
13 difficult.

14 Q. Okay. Now, Mr. Willits, earlier I asked you a couple of  
15 questions about the negotiation between Oculus and id.

16 Is your understanding of those negotiations based on  
17 your personal knowledge?

18 MS. KEEFE: Objection, Your Honor. Asked and  
19 answered, lacks foundation.

20 THE COURT: Sustained. And your time is up.

21 MR. LISY: All right. May I ask one more question,  
22 Your Honor?

23 THE COURT: If it's short.

24 BY MR. LISY:

25 Q. Could you tell us how you felt when you heard that

1 Mr. Carmack left id?

2 A. Yes. When I -- when I found out that John left, it was  
3 like a kick in the gut. You know, I worked with him for my  
4 whole career, right out of college. And, you know, his wife  
5 sent the email, that he was resigning, and, you know, he didn't  
6 come into work to say goodbye, he didn't reach out to me, and,  
7 you know, it was just -- it was really sad. I mean, literally,  
8 today, it's the first time that I have seen John in three and a  
9 half years since he left.

10 MR. LISY: Thank you very much, Mr. Willits.

11 THE WITNESS: You're welcome.

12 THE COURT: Thank you, sir.

13 MS. Keefe?

14 MS. KEEFE: Thank you, Your Honor.

15 CROSS-EXAMINATION

16 BY MS. KEEFE:

17 Q. Mr. Willits, you have never written a single line of code  
18 at id; isn't that correct?

19 A. Yes.

20 Q. Was there anyone at ZeniMax or id in the 2012-2013 who  
21 could have reviewed the SDK that Oculus had sent other than  
22 John Carmack?

23 A. John Carmack would be in the best position.

24 MS. KEEFE: Can I have the ELMO, please?

25 (Pause)

1 BY MS. KEEFE:

2 Q. So you said he was the best. Was there anyone else that  
3 could -- was there anyone else at the company at that time that  
4 could have reviewed the SDK?

5 A. I would have to state John would be the best -- the best  
6 person to do that.

7 MS. KEEFE: Your Honor, motion -- sorry. Your Honor,  
8 objection, nonresponsive. Can you instruct the witness to  
9 answer, please?

10 THE COURT: Yes. She is asking was there anybody  
11 else, not who was the best.

12 THE WITNESS: I'm sorry. You know, I would have to  
13 say out of the programmers like Robert Duffy, maybe.

14 BY MS. KEEFE:

15 Q. Were they working on VR at the time?

16 A. Again, I -- John managed the programming department, so  
17 specifically who was working on VR, that wasn't really  
18 something that I would --

19 Q. So you don't know if anyone else was working on VR in the  
20 entire company at the time; isn't that correct?

21 A. My understanding is that John was working on VR and that  
22 he directed the other programmers.

23 MS. KEEFE: Your Honor, objection, nonresponsive.  
24 Can you please instruct the witness to answer?

25 THE COURT: Sustained.

1 BY MS. KEEFE:

2 Q. You don't know whether there was anyone else working on VR  
3 other than John Carmack; isn't that correct?

4 A. I knew people were helping John with -- with some things,  
5 yes.

6 MS. KEEFE: Your Honor, move to strike as  
7 nonresponsive. Can you instruct the witness to answer the  
8 question?

9 THE COURT: Answer -- really listen and answer her  
10 question, not what you're thinking.

11 BY MS. KEEFE:

12 Q. You don't know whether there was anyone else at id working  
13 on VR other than John Carmack, right?

14 A. No.

15 Q. At the time -- you were talking about how you felt at the  
16 time Mr. Carmack left. There was actually a press release that  
17 went out at the time that Mr. Carmack left, and that was  
18 Defendants' Exhibit 452. In fact, you told the world that  
19 "John's work on id Tech 5 and the technology for the current  
20 development work at id is complete, and his departure will not  
21 affect any current projects."

22 Isn't that true?

23 A. That is the press release.

24 Q. And that's your statement. That's your name right there;  
25 isn't that true?

1 A. Yes.

2 Q. Okay. Just one more document, Mr. Willits.

3 In August of 2013, you sent an email to Mr. Graham  
4 Fuchs, and this is Defendants' Exhibit 403.

5 You said "Ha, ha. I think the whole Oculus thing is  
6 silly. It's like eating at McDonald's, fun for a quick meal,  
7 but eat too much and you'll throw up."

8 Is that your statement?

9 A. I wrote that, yes.

10 MS. KEEFE: Thank you. No further questions, Your  
11 Honor.

12 MR. LISY: Your Honor, I would have one question and  
13 one question alone, if you'd permit me.

14 THE COURT: You bet. You bet.

15 MR. LISY: Thank you, sir.

16 THE COURT: While you're coming, is your real  
17 expertise in being an artist? Is that your thing?

18 THE WITNESS: Yes, Your Honor. Well, I'm a creative  
19 director, so like game design and, you know, how the technology  
20 works and how we can leverage that game design. Does that --

21 THE COURT: You don't draw the weird figures and all  
22 that stuff?

23 THE WITNESS: I -- Your Honor, I do draw some, yes,  
24 yes, but unfortunately, I'm not very artistic, but I do come up  
25 with those things.

1 THE COURT: I thought maybe you were more of a  
2 graphic design guy. I didn't know what kind of your role was.

3 THE WITNESS: I'm sorry, Your Honor.

4 THE COURT: Go ahead.

5 MR. LISY: Thank you, sir.

6 REDIRECT EXAMINATION

7 BY MR. LISY:

8 Q. Mr. Willits, I just have one question. With respect to  
9 the document that you were just shown about "the whole Oculus  
10 thing is silly, it's like eating at McDonald's, fun for a quick  
11 meal, but eat too much and you'll throw up".

12 Could you tell the jury what you meant by that,  
13 please?

14 A. Yes, yes, yes. So on the whole Oculus thing is silly,  
15 around that time when John was working with us, id and Oculus,  
16 there was -- there was people on the internet saying oh, you  
17 know, what's going to happen to the company? You know, is this  
18 the end of id?

19 So that was -- it was just -- it was so much noise  
20 that I thought it was very silly.

21 And then the whole McDonald's thing is, yeah, you  
22 know, sometimes, when people put the Oculus on, the VR, they --  
23 they can get sick. Like, this week -- I'm sorry. This month,  
24 the first week of this month, three weeks ago, Intel did a  
25 demonstration with Oculus --

1 MS. KEEFE: Objection, Your Honor.

2 THE WITNESS: -- and they passed out barf bags.

3 THE COURT: What's your objection?

4 MS. KEEFE: Objection, Your Honor. He's interpreting  
5 an email. He's talking about something that just happened last  
6 week, and he's rambling on. Nonresponsive.

7 THE COURT: Yeah. I do think it was nonresponsive.

8 You can ask another question, if you want to, to try  
9 to clear this up.

10 MR. LISY: Thank you, sir.

11 BY MR. LISY:

12 Q. Mr. Willits, when you wrote the email that you were just  
13 talking about, were you intending to be derogatory towards  
14 Oculus?

15 A. Oh, no, no, no, sir.

16 Q. Okay.

17 MR. LISY: No further questions. Thank you.

18 THE COURT: Anything else?

19 MS. KEEFE: Just to move DX0403 into evidence,  
20 please. It was not on the agreed list, but there were no  
21 objections this morning.

22 MR. LISY: No objections.

23 THE COURT: Then it's admitted into evidence.

24 (Defendants' Exhibit No. DX0403 received)

25 THE COURT: You can step down. Thank you.

1 MS. KEEFE: Thank you, Your Honor.

2 MR. STOJILKOVIC: Your Honor, the Defendants call  
3 Gloria Kennickell.

4 THE COURT: Kendall?

5 MR. STOJILKOVIC: Kennickell.

6 THE COURT: Kennickell.

7 (Pause)

8 THE COURT: We're going to get you sworn in, ma'am,  
9 okay? Are you ready?

10 (The witness was sworn)

11 THE COURT: If you'll take a seat next to me, ma'am.

12 THE WITNESS: Thank you.

13 THE COURT: I don't know if they got you a new bottle  
14 of water or not.

15 THE WITNESS: Thank you, Your Honor.

16 THE COURT: They're going to get you one.

17 MS. KEEFE: Right here, Your Honor.

18 THE COURT: Does she need any papers or anything?

19 MS. KEEFE: I don't believe so, Your Honor.

20 THE COURT: Okay.

21 THE WITNESS: Thank you.

22 THE COURT: Okay. Did y'all get all shifted around  
23 in your seats? Later today I'm going to take one chair out,  
24 and it's going to be -- what was that game we use to -- do you  
25 remember musical chairs? I just want to see who will win.

1 I've got a suspicion Mr. Hemr will.

2 MR. STOJILKOVIC: May I proceed, Your Honor?

3 THE COURT: Are you ready?

4 MR. STOJILKOVIC: I am.

5 THE COURT: Let's go.

6 GLORIA KENNICKELL, DEFENDANTS' WITNESS, SWORN

7 DIRECT EXAMINATION

8 BY MR. STOJILKOVIC:

9 Q. Good morning. Can you please introduce yourself to the  
10 jury?

11 A. Hi. My name is Gloria Kennickell.

12 Q. Ms. Kennickell, what do you do for a living?

13 A. I am a software engineer.

14 Q. Where do you work?

15 A. I work at Oculus.

16 Q. And what are your basic responsibilities as a software  
17 engineer at Oculus?

18 A. Right now, I work on the mobile SDK for Gear VR.

19 Q. What is Gear VR?

20 A. So Gear VR is a virtual reality headset that's  
21 manufactured by Samsung, and you have a high-end Samsung phone  
22 that you dock to the headset. And when you do that, the Oculus  
23 software runs in your VR.

24 Q. Where are you from originally?

25 A. Dallas, Texas.

1 Q. How did you first become interested in programming?

2 A. This is a fun story. So I didn't actually have a computer  
3 until I was 20. And I happened to run into a fellow named Jan  
4 Paul van waveren who had told me that he hadn't learned a  
5 program until three years prior, and so I thought, well, if  
6 this guy can do it, so can I. So I switched my major to  
7 computer engineering, and then I didn't realize that he was  
8 like a super genius at the time, so it was very easy for him to  
9 do.

10 Q. Where did you go to college?

11 A. The University of North Texas.

12 Q. And what did you graduate in?

13 A. I have a bachelor of science in computer engineering.

14 Q. Did you go right from college into computer programming?

15 A. I did.

16 Q. And where have all the jobs you've held been?

17 A. They've been here in North Texas.

18 Q. Did there come a time when you joined id Software?

19 A. Yes, there was.

20 Q. When was that?

21 A. June of 2007.

22 Q. How did you come to work for id Software?

23 A. So my husband Christian Antkow worked at id Software, and  
24 he told me that they were looking for a junior engineer to work  
25 on graphics with John Carmack.

1 Q. When you were interviewing at id Software, did you get to  
2 meet with John Carmack?

3 A. Yes, I did.

4 Q. What was it like to be interviewed by John Carmack?

5 A. Terrifying and amazing all at the same time.

6 Q. Did you get the job?

7 A. I did, yeah.

8 Q. What was your job title?

9 A. I believe it was just programmer.

10 Q. When you started at id, were there any other female  
11 programmers working there?

12 A. No.

13 Q. And over time did more female programmers start working at  
14 id?

15 A. No.

16 Q. You were the only one?

17 A. Yes, I was.

18 Q. What was the work environment like at id in your first  
19 couple of years there?

20 A. It was a really small team. We were all very focused and  
21 just had a lot of passion for making great games and working  
22 really hard. I felt like we were a team that could just  
23 accomplish anything.

24 Q. Were you at id when ZeniMax took it over?

25 A. Yes, I was.

1 Q. Do you recall roughly when that was?

2 A. That was June 2009.

3 Q. How did you find out that ZeniMax had bought id?

4 A. So one morning we were instructed to meet at a hotel, and  
5 we noticed that some people -- you don't really dress up at  
6 game programming jobs. And they were wearing really nice  
7 clothes, and so we thought something was up. And we went into  
8 the hotel, and they announced that id had been acquired.

9 Q. And when you say "we," who is we?

10 A. The whole company.

11 Q. Okay. So you were just told to go to a hotel and then an  
12 announcement was made?

13 A. Yes.

14 Q. Was anyone from ZeniMax there at the hotel that morning?

15 A. Yes, they were.

16 Q. Who do you recall being there?

17 A. Mr. Altman and I believe Ernie Del.

18 Q. Now, when you guys were all asked to go to this hotel and  
19 you were informed that ZeniMax had bought id, was there some  
20 discussion then of your employment situation going forward at  
21 ZeniMax?

22 A. Yes. We were instructed to kind of line up for employment  
23 packets.

24 Q. Okay. And can you take a look at what's been marked as  
25 Plaintiffs' Exhibit 1943? I think it's in your binder there.

1 MR. STOJILKOVIC: And I don't believe there's an  
2 objection to this one, though, it's not preadmitted.

3 BY MR. STOJILKOVIC:

4 Q. Can you just take a look at it first? Do you recognize  
5 this?

6 A. Yes, I do.

7 Q. What is it?

8 A. This is an employment agreement.

9 Q. Okay. And is this the packet you got when you lined up  
10 that morning?

11 A. Yes, it is.

12 MR. STOJILKOVIC: Okay. May I move it in?

13 MR. PHILBIN: You may. No objection.

14 THE COURT: The document is admitted into evidence.  
15 (Plaintiffs' Exhibit No. 1943 received)

16 MR. STOJILKOVIC: And can I have the ELMO?

17 BY MR. STOJILKOVIC:

18 Q. So is the first thing we see there the employment offer  
19 that you got in line that morning?

20 A. Yes.

21 Q. Okay. And just turning to the second page, is that your  
22 signature there?

23 A. Yes, it is.

24 Q. And who else signed it?

25 A. Mr. Altman.

1 Q. Okay. Now, did you get the impression when you guys were  
2 told to line up and handed these out that morning that this was  
3 something negotiable or did you understand it to be a  
4 take-it-or-leave-it offer?

5 A. Take it or leave it.

6 Q. Now, was this employment offer better, equal, or worse  
7 than your employment package had been at id before ZeniMax took  
8 over?

9 A. It was worse.

10 Q. How was it worse?

11 A. So at id, before ZeniMax, we had our health insurance paid  
12 for us, and then also we had an SEP contribution from the  
13 company for our retirement.

14 Q. Okay. Were you happy about this contract offer?

15 A. No.

16 Q. So why did you sign it?

17 A. Because I needed a job and, you know, I would lose out  
18 working with some of the people that I love most in the world.

19 Q. And was your husband, Mr. Antkow, also presented with a  
20 similar offer that morning?

21 A. He was.

22 Q. Okay. And so both of your livelihoods were at issue?

23 A. Yes.

24 Q. Did you guys have debts at that time?

25 A. Yes, we did.

1 Q. What kind, generally speaking?

2 A. So house, cars, some credit card, and then I think I still  
3 had some student loans outstanding.

4 Q. Okay. And if I can direct your attention to the portion  
5 of this letter that says at-will --

6 MR. STOJILKOVIC: And, Dave, could we shift over to  
7 the slide, because it will be easier to read, slide number 3.

8 BY MR. STOJILKOVIC:

9 Q. You can read the paper or you can read what's up there.

10 Can you read just what's been highlighted from this  
11 employment letter?

12 A. Yes.

13 "At-will employment. ZeniMax is an 'at-will'  
14 employer. This means your employment is not for any definite  
15 period of time and either you or ZeniMax may terminate such  
16 employment for any reason, at any time, with or without cause  
17 and with or without notice."

18 Q. What did you understand that to mean?

19 A. That ZeniMax could fire me at any time and that I could  
20 leave at any time.

21 MR. STOJILKOVIC: Okay. Could we go back to the  
22 ELMO, please?

23 BY MR. STOJILKOVIC:

24 Q. There's another part of this document that goes on for  
25 several pages, and it's titled, do you see there, "Agreement on

1 Ideas, Inventions, and Confidential Information"?

2 A. Yes.

3 Q. Are you familiar with this document that goes on for about  
4 six pages?

5 A. Yes, I am.

6 Q. Okay. And is it your -- does your signature appear at the  
7 end of it?

8 A. Yes, it does.

9 Q. Okay. What did you understand this document generally to  
10 relate to?

11 A. So there's a lot of legalese to get through, but pretty  
12 much talking about if I were to try to do anything in my spare  
13 time, then it could possibly be owned by ZeniMax and that like  
14 any kind of confidential information should remain  
15 confidential.

16 Q. Okay. You understood it also even applied to things you  
17 did in your spare time that they would still claim ownership of  
18 it?

19 A. Yes, they could.

20 Q. And what, if anything, was your understanding about  
21 whether you could tell people you worked on stuff at ZeniMax  
22 even if it was true?

23 A. So from one of the clauses, it looks like I couldn't even  
24 claim attribution for something that I had worked on.

25 Q. Okay. How did you feel about this agreement?

1 A. It felt pretty draconian.

2 Q. And what's draconian for those of us who don't know Greek  
3 history?

4 A. So, like, the penalty for everything is death.

5 Q. And you don't mean that literally?

6 A. No, not literally. Sorry.

7 Q. So why did you sign it?

8 A. I needed a job.

9 Q. What was it like to work at id after ZeniMax bought the  
10 company?

11 A. So after the acquisition, we were supposed to be growing  
12 the teams up to, you know, pipeline multiple projects, and we  
13 grew really quickly. And the culture wasn't kind of  
14 maintained, so we ended up with lots of groups who are kind of  
15 pitted against each other. It was very them versus us. You  
16 know, there was really bad communication issues and, you know,  
17 things just felt overall more corporate.

18 MR. STOJILKOVIC: Okay. Dave, could we have slide  
19 number 6, please?

20 BY MR. STOJILKOVIC:

21 Q. Ms. Kennickell, Mr. Altman testified earlier in this trial  
22 and he told this jury our motto is "we turn square corners,"  
23 and he went on to explain it.

24 And Mr. Willits this morning came in and told the  
25 jury that's the ZeniMax motto.

1 Have you ever heard Mr. Altman use the phrase "we  
2 turn square corners"?

3 A. No.

4 Q. Have you ever heard those words come out of Mr. Willits'  
5 mouth?

6 A. No.

7 Q. Have you ever heard anyone at ZeniMax or id use that  
8 phrase?

9 A. No. And I'm not sure what it means.

10 Q. Okay. Is it posted anywhere?

11 A. Not that I know of.

12 Q. So if this was a motto, it was some kind of secret motto  
13 you didn't know about?

14 A. Potentially, yes.

15 Q. Mr. Altman also said speaking of his company, "We don't  
16 take shortcuts when it comes to our culture, our belief in  
17 integrity, our belief in respect, our belief in loyalty, our  
18 dedication to each other."

19 Do you agree with that characterization of how  
20 ZeniMax runs its business?

21 A. No.

22 Q. We'll get into that a little bit.

23 MR. STOJILKOVIC: We can put that one down.

24 BY MR. STOJILKOVIC:

25 Q. Now, did you work on virtual reality while you were at id?

1 A. No.

2 Q. Were you aware of anyone working on VR at id?

3 A. Yes.

4 Q. Who?

5 A. John Carmack.

6 Q. And, briefly, what were you aware of Mr. Carmack -- what  
7 were you aware that he was doing back when he was at id?

8 MR. PHILBIN: Objection, foundation.

9 MR. STOJILKOVIC: I'll rephrase.

10 THE COURT: Do what?

11 MR. STOJILKOVIC: I can rephrase.

12 THE COURT: Okay.

13 BY MR. STOJILKOVIC:

14 Q. All right. Did you have any knowledge of -- first of all,  
15 whether or not Mr. Carmack was working on VR?

16 A. Yes.

17 Q. Okay. And what was the source of that knowledge?

18 A. So John had been working with various headsets and trying  
19 to incorporate one of our Rage demo levels into it.

20 Q. Okay. And did you know that in part by observing it?

21 A. Observing, yes.

22 Q. Okay. Now --

23 MR. STOJILKOVIC: Dave -- actually, never mind.

24 BY MR. STOJILKOVIC:

25 Q. Mr. Altman told this jury that he thought other people at

1 id were working on VR besides John Carmack. Do you recall any  
2 other people at id working on VR?

3 A. No, I don't.

4 Q. Would you have known if someone at id besides John Carmack  
5 worked on VR?

6 MR. PHILBIN: Objection, calls for speculation.

7 THE COURT: I'll sustain that.

8 BY MR. STOJILKOVIC:

9 Q. Did you work with John Carmack at id?

10 A. Yes, I did.

11 Q. And do you know of other people who worked with John  
12 Carmack at id?

13 A. Yes, I did.

14 Q. Okay. Were you -- describe the team you worked on just  
15 very briefly.

16 A. So I worked on the core technology team, and we were  
17 responsible for, like, the game engines, physics engines,  
18 things like that.

19 Q. Do you know what other people at the core technology team  
20 were doing in 2011 and 2012?

21 A. Yes.

22 MR. PHILBIN: Objection, calls for speculation.

23 MR. STOJILKOVIC: I asked does she.

24 THE COURT: Just what you know.

25 Obviously, she doesn't know everything. Just -- you

1 can ask just what she does know.

2 MR. STOJILKOVIC: Okay.

3 THE COURT: So I partially sustain the objection.

4 BY MR. STOJILKOVIC:

5 Q. Okay. To your knowledge, was anybody from the core tech  
6 team working on VR?

7 A. To my knowledge, no.

8 MR. STOJILKOVIC: Dave, can we have slide Number 7?

9 BY MR. STOJILKOVIC:

10 Q. Mr. Altman told the jury "We, ZeniMax, saw the opportunity  
11 of VR before the rest of the world. We're the ones who  
12 invented it."

13 Is that the truth?

14 MR. PHILBIN: Objection, calls for speculation, lacks  
15 foundation.

16 THE COURT: Just what does she know about that. I'll  
17 let her answer that.

18 BY MR. STOJILKOVIC:

19 Q. What do you know about that?

20 A. So when I was working at ZeniMax, the first time that I  
21 saw VR was when John Carmack was working on it.

22 Q. Okay. Did you ever have an understanding that he invented  
23 it?

24 A. No.

25 MR. STOJILKOVIC: Can we go to Number 8, please,

1 Dave.

2 BY MR. STOJILKOVIC:

3 Q. Mr. Altman told this jury, we -- I think he was talking  
4 about other people, not himself, but we actually had looked at  
5 VR technology for a long time, going back into the 1990s.

6 To your knowledge, do you know of anything about  
7 ZeniMax looking into VR for a long time?

8 A. To my knowledge, the first time that I heard about VR at  
9 ZeniMax was when John Carmack was working on it.

10 Q. Okay. Now, we've heard a lot of testimony --

11 MR. STOJILKOVIC: You can put that down, Dave.

12 Sorry. Excuse me.

13 BY MR. STOJILKOVIC:

14 Q. -- about clean rooms in this case?

15 Do you know what a clean room is as it relates to  
16 software?

17 A. So when I was working at L3 Communications, we had the  
18 concept of a clean room, yes.

19 Q. Okay. That's one of the jobs you had before id?

20 A. Yes.

21 I'm sorry. L3 Communications. L3.

22 BY MR. STOJILKOVIC:

23 Q. And would I be -- just to make sure that what you're  
24 thinking of and what I'm asking you are the same thing, is this  
25 clean room kind of we're talking about is where programmers are

1 isolated and they write code without kind of contact with the  
2 outside world?

3 MR. PHILBIN: Objection, leading.

4 THE COURT: Yeah, I'm going to let him lead that. I  
5 don't know how he can get into it without that, so overrule.

6 THE WITNESS: Sorry. I'm answering? Sorry.

7 THE COURT: Yeah, you can answer.

8 THE WITNESS: Okay. My bad.

9 So you wouldn't bring in your cell phone or internet  
10 connection or you wouldn't have anything like data drives to  
11 bring in with you.

12 BY MR. STOJILKOVIC:

13 Q. In all the years you worked there, did id Software ever  
14 use a clean room?

15 A. Not that I know of.

16 Q. Did ZeniMax use a clean room, to your knowledge?

17 A. Not that I know of.

18 Q. Do you know of clean rooms being used in any other ZeniMax  
19 subsidiaries?

20 A. I have not heard of it, no.

21 Q. While you were working at id, did you ever hear of the  
22 Oculus Rift?

23 A. Yes, I did.

24 Q. What was your understanding back then when you were at id  
25 of what the Oculus Rift was?

1 A. It was a headset that was being developed by Palmer  
2 Luckey.

3 Q. Did you ever hear anyone at ZeniMax or id refer to the  
4 Rift as ZeniMax's technology?

5 A. No.

6 Q. Did ZeniMax hold end-of-year events in the D.C. area?

7 A. Yes.

8 Q. And did you ever attend those?

9 A. I did.

10 Q. Who would address the assembled folks at those events?

11 A. So Mr. Altman would do the -- would do the overall  
12 addressing and the different studios would present what they  
13 were working on for the year.

14 Q. Did you attend any of Mr. Altman's addresses?

15 A. I did.

16 Q. Okay. Generally speaking, what kind of things would he  
17 talk about?

18 A. So overall company vision and kind of, like, you know,  
19 focusing on AAA games and like a wild killer, like Steam killer  
20 type stuff.

21 Q. Okay. And then just to be clear, we're not suggesting  
22 wild killer or Steam killer, those are like competing apps or  
23 platforms, right?

24 A. Yes, yes.

25 Q. Okay. And did he ever talk about virtual reality in any

1 of the talks you attended?

2 A. I didn't hear anything about virtual reality when I was  
3 there.

4 Q. Did he ever talk about the Rift or about the E3 prototype?

5 A. Not that I am aware of.

6 Q. We've heard some testimony in this case about one time  
7 that you checked in VR code at id.

8 Do you remember doing that?

9 A. I don't remember, no.

10 Q. Can you take a look at, in your notebook, what's been  
11 marked PX132, and it's already in evidence.

12 MR. STOJILKOVIC: If I could have the ELMO.

13 MR. PHILBIN: Your Honor, lacks foundation. She just  
14 said she doesn't remember.

15 THE COURT: We'll just see what she knows.

16 BY MR. STOJILKOVIC:

17 Q. Okay. Why don't you look at it first. I won't put it on  
18 the ELMO yet.

19 Do you recognize this document?

20 A. I do.

21 Q. What is it?

22 A. It is a P-4 check-in. Perforce check-in.

23 Q. Who did this check-in?

24 A. That was me.

25 MR. STOJILKOVIC: May I examine the witness about it?

1 THE COURT: Let's see. Have you got the -- I  
2 don't -- PX132. Okay.

3 Any objection to that document?

4 MR. STOJILKOVIC: I believe it's already in.

5 MR. PHILBIN: I don't object to the document. I  
6 object to the lack of foundation when she said she didn't  
7 remember checking in.

8 THE COURT: I thought she just said she did. Maybe I  
9 missed something. Clear that up for me.

10 MR. STOJILKOVIC: Okay.

11 BY MR. STOJILKOVIC:

12 Q. You don't remember specifically that you checked this  
13 document in five years ago?

14 A. Correct. I don't remember specifically, but it's from me.

15 Q. But looking at this document, you recognize it to be  
16 something you checked in?

17 A. Yes.

18 Q. Okay.

19 MR. STOJILKOVIC: She doesn't have a perfect memory,  
20 but I believe she can testify about it.

21 THE COURT: Okay. I want to make sure I'm clear how  
22 much -- how do you know you did it?

23 THE WITNESS: Because the username and computer were  
24 mine.

25 THE COURT: Could somebody else have done that and

1 not be yours?

2 THE WITNESS: If they had logged into my PC and did  
3 it.

4 THE COURT: Okay.

5 MR. STOJILKOVIC: Your Honor, I just also note for  
6 the record that Plaintiffs have repeatedly put forth evidence  
7 in this case saying that Ms. Kennickell did this. If they are  
8 backing away from that, I'm happy to move on.

9 THE COURT: I'm trying to ask a couple of questions  
10 here, if you will let me think through it for just a second.

11 So having seen that, does it bring back that you  
12 worked on this?

13 THE WITNESS: That I made a check-in. I checked in a  
14 lot of codes, so it's hard to remember every single one.

15 THE COURT: I don't even know what that means. I  
16 checked something in. I mean --

17 THE WITNESS: So --

18 THE COURT: Like when I played basketball, I checked  
19 in my uniform at the end of the year. That's what I'm talking  
20 about. Or I would give it to the guy, and they would wash it  
21 that day.

22 THE WITNESS: So --

23 THE COURT: So what does that relate -- relate that.  
24 Help me.

25 THE WITNESS: So Perforce is -- I guess in the basic

1 sense, it is like a server, and it allows developers to  
2 collaborate. So what I would do if I made a change, I would  
3 submit it to the server and then other developers could grab  
4 those changes.

5 THE COURT: So does this indicate you had done  
6 something to it and then you put it on the server?

7 THE WITNESS: Yes.

8 THE COURT: Wow. I can't believe I got that.  
9 Okay. You still have an objection?

10 MR. PHILBIN: I think you've established, Your Honor.  
11 I don't have an objection now, but I think we had one "I don't  
12 remember" and now answers to your questions.

13 THE COURT: Do you want to object to my questions?  
14 Okay.

15 MR. PHILBIN: I do not.

16 THE COURT: Okay. All right. We can go ahead.

17 BY MR. STOJILKOVIC:

18 Q. All right. Ms. Kennickell, I'm just going to ask you some  
19 very basic questions about this.

20 Under your name there, there is a line that says  
21 Tech4x research, and it reads, "From John: Time warp render  
22 reprojection with experimental NVIDIA extension."

23 What is that line?

24 A. So that's a comment that you can apply to any check-in.

25 Q. Who wrote that comment?

1 A. I did.

2 Q. And when you say "from John," what is the significance of  
3 that?

4 A. It means the code was John's.

5 Q. Okay. And where did you get the rest of this comment or  
6 title?

7 A. It must have been from John because at the time I wouldn't  
8 understand what that meant.

9 Q. Okay. My only other question about this thing that you're  
10 checking in, did you write or work on any of this code that you  
11 checked in?

12 A. No.

13 Q. Why did you check it in if you're not the one who wrote it  
14 or worked on it?

15 A. Because I found out the one thing I'm better at John than  
16 John, and that's Perforce, so --

17 THE COURT: Is what?

18 THE WITNESS: Perforce. That's source control.

19 THE COURT: Perforce?

20 THE WITNESS: Perforce.

21 BY MR. STOJILKOVIC:

22 Q. Perforce.

23 And I believe -- Ms. Kennickell, is that where this  
24 gets checked into, that repository?

25 A. Yes. I was helping him get code change put into the

1 repository.

2 THE COURT: What the heck is the Perforce?

3 THE WITNESS: It's like the source control system,  
4 so, like, you have a server in Perforce is what manages all the  
5 revisions and edits and, like, adds metadata.

6 THE COURT: That's the name of some program?

7 THE WITNESS: Yes, yes.

8 THE COURT: Okay.

9 BY MR. STOJILKOVIC:

10 Q. When did you leave id and ZeniMax to work for Oculus?

11 A. That was February of 2014.

12 Q. Was it a sudden decision for you to leave?

13 A. No.

14 Q. Did you leave by yourself?

15 A. I did not.

16 Q. Who else left at the same time?

17 A. So it was myself, Jan Paul van Waveren, Jason Kim,  
18 Jonathan Wright, and my husband Christian Antkow.

19 Q. Had all of you worked together at id?

20 A. Yes.

21 Q. All of you on the same basic team?

22 A. We were working on the Rage team.

23 Q. Why did you guys want to leave together?

24 MR. PHILBIN: Objection, calls for speculation as to  
25 anybody other than her.

1 THE COURT: I agree. Sustained.

2 BY MR. STOJILKOVIC:

3 Q. Okay. Did you want to go work with those people, you  
4 yourself, that group?

5 Let's aside what's in their minds. In your mind, are  
6 those people you wanted to work with even after you left id?

7 A. Yes. I mean, we were liking a family. It's not often  
8 that you find a group of people that you can work so well with  
9 and that you feel like you can accomplish anything with.

10 Q. Okay. And from my remaining questions I would just like  
11 you to tell me what you are thinking and your reasons as we go  
12 through the timeline.

13 when did you first start thinking about leaving id  
14 seriously?

15 A. So when my Matt Hooper was fired. Matt Hooper.

16 Q. Okay. And do you remember roughly the time that Matt  
17 Hooper was fired? When was that?

18 A. That was January of 2013.

19 Q. So more than a year before you left?

20 A. Yes.

21 Q. Why did Matt Hooper getting fired make you think about  
22 leaving id?

23 A. Because John didn't have a say in his firing.

24 Q. John who?

25 A. John Carmack.

1 Q. Why did John not having a say in Matt Hooper's firing make  
2 you want to leave id?

3 A. Because Matt Hooper was someone who had -- he had been  
4 with the company a long time, and he's a great worker, and, you  
5 know, if he could be fired without any say from John, then any  
6 of us could have been.

7 Q. Were you the only person, according to what you know and  
8 saw, were you the only person who was upset when Matt Hooper  
9 was fired?

10 A. No, I was not.

11 Q. And how do you know that?

12 A. Because several people left that day after Matt was fired.

13 Q. Okay. Now, moving forward in 2013, do you recall a time  
14 that summer when John Carmack started working part-time at id  
15 and part-time at Oculus?

16 A. Yes.

17 Q. And how did that make you feel?

18 A. I didn't feel very good about it, because, I mean, this  
19 was a company that he had invested a lot of time in, and so if,  
20 you know, he had felt like he had to work part-time, that  
21 meant, you know, things weren't probably good.

22 Q. What understanding, if any, did you have about whether  
23 Mr. Carmack was allowed to work on VR at id in 2013?

24 MR. PHILBIN: Objection, calls for speculation.

25 Lacks foundation.

1 THE COURT: Sustained.

2 BY MR. STOJILKOVIC:

3 Q. Do you have any understanding of whether John Carmack was  
4 allowed to work on VR at id in 2013?

5 A. Yes.

6 Q. What is the basis of that understanding?

7 A. What he told me.

8 Q. Was Mr. Carmack happy, according -- from what you  
9 understood in your conversations, at id in 2013?

10 MR. PHILBIN: Objection, calls for speculation.  
11 Lacks foundation.

12 THE COURT: Sustained.

13 BY MR. STOJILKOVIC:

14 Q. When Mr. Carmack was working part-time at id and part-time  
15 at Oculus, did you have a conversation with him about you  
16 leaving id?

17 A. I had a conversation with him that I wasn't happy at id.

18 Q. Okay. And did he attempt to recruit you over to Oculus at  
19 that time?

20 A. No.

21 Q. What did he attempt to do?

22 A. He tried to encourage me and say that, you know, there's  
23 always new and interesting problems to solve.

24 Q. Where?

25 A. At id.

1 Q. So you're saying he tried to -- told you to stay at id  
2 even when he was splitting time?

3 A. He encouraged me to stay.

4 Q. Were other people leaving id during 2013?

5 A. Yes.

6 Q. About how many to --

7 MR. PHILBIN: Objection, Your Honor, again, calls for  
8 speculation. Lacks foundation.

9 BY MR. STOJILKOVIC:

10 Q. You worked at id, right?

11 A. I did.

12 Q. About --

13 THE COURT: If you know if other people were leaving,  
14 but not just what you heard.

15 BY MR. STOJILKOVIC:

16 Q. Okay. About how many people were working at id, ballpark,  
17 just so we have a sense of how many people are there roughly?

18 A. I think after the round of layoffs it was maybe 120.

19 Q. Okay. And then about how many of those left during 2013,  
20 to your recollection, ballpark?

21 A. I -- it had to be around 35.

22 Q. Okay. You remembered that kind of chunk about a quarter  
23 of the people leaving?

24 A. There was a lot of people, yes.

25 Q. Okay. How did that affect your experience at id that all

1 these other people were leaving?

2 A. So we had lost some big players on the core tech team,  
3 and, you know, in doing so that kind of spreads the work -- you  
4 get a lot of the workload added to you. So we were spread a  
5 little thin.

6 Q. Okay. Now, let me get back to your process.

7 what options, if any, did you investigate when you  
8 were thinking about leaving id?

9 A. So one of the options was starting a company.

10 Q. Were you planning on starting a company by yourself or  
11 with somebody?

12 A. With other people.

13 Q. Which other people?

14 A. Jan Paul van Waveren, Jonathan Wright, Jason Kim, and then  
15 my husband, Christian Antkow.

16 Q. So that same group we talked about earlier?

17 A. Yes.

18 Q. Okay. And what kind of company were you thinking about  
19 starting?

20 A. We were thinking about starting a game company.

21 Q. Okay. Did you end up doing that?

22 A. We did not.

23 Q. Okay. Why not?

24 A. So it was very difficult to get the kind of funding that  
25 you need. And then, you know, Jan Paul had very specific

1 needs, and we needed to make sure that he was going to be okay.

2 Q. Without getting into it, were some of those health  
3 related?

4 A. Yes, they were.

5 Q. Did you investigate any -- going to any companies?

6 A. We did.

7 Q. Which one?

8 A. Nvidia.

9 Q. And is that something you investigated thoroughly?

10 A. Yes. We went so far as to take a look at what their  
11 employment agreement was.

12 Q. Okay. How did their employment agreement compare to what  
13 ZeniMax gave you that morning when they had you line up at the  
14 hotel?

15 A. It was definitely a breath of fresh air. It looked like  
16 we could be able to work on side projects on our own time  
17 without the company claiming ownership.

18 Q. Did you end up going to Nvidia?

19 A. We did not.

20 Q. Okay. Do you remember when was the first time anyone  
21 mentioned to you the idea that you should go or might go to  
22 Oculus?

23 A. Yes.

24 Q. When was that? You don't have to give me a date, just  
25 tell me what you remember.

1 A. I believe it was like July, August timeframe of 2013 --

2 Q. How did that come up?

3 A. So it was announced that John and Matt Hooper were both  
4 going to be at Oculus and Robert Duffy, my manager, came into  
5 my office, and he was very mad or angry looking. And he was  
6 asking me, I heard a rumor that you guys were all going to  
7 Oculus. This better not be true. Is this true?

8 And I said no.

9 And then he proceeded to say, well, you know, it's  
10 not soliciting if you go on the website and apply for a job  
11 online, and I thought that that was strange. The light bulb  
12 kind of went off.

13 Q. So is your testimony the first time it occurred to you to  
14 think about Oculus was when somebody wrongly came in and asked  
15 you are you leaving Oculus?

16 A. Yes.

17 Q. Or Oculus. Okay.

18 Can we take a look at what's been marked for  
19 identification as DX1922? It's in your binder there.

20 MR. STOJILKOVIC: This is not on the preadmit. I'd  
21 like to use.

22 MR. PHILBIN: No objection, Your Honor.

23 MR. STOJILKOVIC: Thank you.

24 THE COURT: It's admitted into evidence.

25 well, are you offering for evidence or just --

1 MR. STOJILKOVIC: I am offering it into evidence,  
2 Your Honor. Thank you.

3 (Defendants' Exhibit No. 1922 received)

4 BY MR. STOJILKOVIC:

5 Q. All right. So let's -- can you -- can you read that email  
6 on the paper or on the ELMO?

7 A. Yes.

8 Q. Okay. And who's the bottom email from?

9 A. From me.

10 Q. Okay. And is it to this group of people we've been  
11 talking about?

12 A. Yes.

13 Q. What's the title?

14 A. "Oh my."

15 Q. Okay. And do you write "I was just informed by Duffy that  
16 there's a rumor circulating that we're all leaving for Oculus  
17 to work for John. Where do people get this"?

18 A. Yes.

19 Q. Does this accurately capture your reaction to Mr. Duffy  
20 making this suggestion?

21 A. Yes.

22 Q. Okay. Let's go on up.

23 Mr. Kim, he's another of this group we've been  
24 talking about. What does he reply?

25 A. He said, "Wow, that's funny, but with so many people

1 leaving already and John's announcement yesterday, I'm sure  
2 there are plenty other rumors flying around."

3 Q. And Mr. Wright, he's another of the group. What does he  
4 say?

5 A. He says "Nice. That's news to me."

6 Q. Okay. Now, did you ever visit Mr. Carmack while you were  
7 still at id and he was at Oculus?

8 A. I did.

9 Q. Many times or one time?

10 A. It was just the once.

11 Q. Okay. Do you know how that visit got set up?

12 A. My husband, Christian Antkow emailed him and asked if, you  
13 know, there was a good time to see him.

14 Q. Okay. Do you know what the purpose of that visit was?

15 A. We missed him.

16 Q. And who went over? Was it just you or did somebody else  
17 come with you for that visit?

18 A. So it was myself, Christian, and then Jan Paul.

19 Q. Okay. And tell me what happened. What do you remember  
20 happening during that visit?

21 A. So John was just kind of showing us what he was working on  
22 because he's always tinkering and doing really cool stuff, so  
23 we took a look at some of the stuff he was working on.

24 Q. Okay. And was that here in Dallas?

25 A. It was.

1 Q. Okay. And did -- during that visit did John Carmack  
2 attempt to recruit you in any way to come work at Oculus?

3 A. No.

4 Q. Did anyone over there try to recruit you?

5 A. No.

6 Q. When did you first start communicating with Oculus about  
7 potentially going to work there?

8 A. So I received a communication from Brendan over LinkedIn.

9 Q. Who's Brendan?

10 A. Brendan Iribe.

11 Q. Okay. And do you remember roughly when that was?

12 A. Sorry, November or October of 2013.

13 Q. Sometime late 2013?

14 A. Late 2013.

15 Q. '13?

16 A. '13. Sorry.

17 MR. PHILBIN: Objection. Leading. She just  
18 testified it was 2015, and he's trying to change her testimony.

19 THE WITNESS: No, I didn't --

20 BY MR. STOJILKOVIC:

21 Q. Ms. Kennickell, when did you start working at Oculus?

22 A. In 2014.

23 Q. And did you have the use of a time machine that allowed  
24 you to contact them in 2015 and go back in time to start  
25 working there in 2014?

1 A. No.

2 Q. Okay. Was it 2013?

3 A. Sorry. 2013. I'm nervous.

4 THE COURT: The time machine came up, again, though.  
5 I keep trying to tell y'all about that.

6 BY MR. STOJILKOVIC:

7 Q. Okay. And what happened after -- after this LinkedIn  
8 message from Mr. Iribe?

9 A. So he put me in contact with Nate Mitchell.

10 Q. Did you have any kind of conversations or, you know,  
11 communication with Mr. Mitchell?

12 A. I did. We had a phone call.

13 Q. Okay. What do you remember being discussed?

14 A. We discussed going out to Irvine to visit the Oculus  
15 office.

16 Q. Okay. And did you, in fact, go?

17 A. I did.

18 Q. Okay. And do you know if other members of this group of  
19 people we've been talking about also went?

20 A. Yes.

21 Q. Okay. Was that your first time going to Oculus's main  
22 offices in California?

23 A. Yes, first time.

24 Q. Okay. What happened during that visit?

25 A. So Brendan showed us around the office. He kind of took

1 us to each station and was able to just very clearly explain  
2 all the little technical details, and people were hard at work  
3 even though it was Christmas break. And then we ended up  
4 doing -- going to see the Rift demo.

5 Q. Okay. What was your impression of Mr. Iribe as the Oculus  
6 CEO?

7 A. He had a lot of charisma, and it was just very impressive  
8 that he was able to easily explain technical details.

9 Q. Okay. Do all CEOs understand the technology of their  
10 companies in your experience?

11 A. In my experience, I've not met a CEO like Brendan at a  
12 technical level.

13 Q. You also said -- I believe you said you got to demonstrate  
14 the Oculus Rift during that visit.

15 what was your impression of the demonstration?

16 A. I was floored. The immersion was there. I mean, you're  
17 on a cliff, and you really think that if you step over you're  
18 going to fall off.

19 Q. And when you were -- the content you were watching on the  
20 Rift, was there any of that Doom or Rage or any kind of  
21 id-related content?

22 A. No, there was not.

23 Q. Okay. Was Mr. Carmack there when you visited the main  
24 offices in California?

25 A. No, he was not.

1 Q. And during this time, did he try to recruit you in any way  
2 to go to Oculus?

3 A. No.

4 Q. Okay. Around this time did you have any contact with  
5 Mr. Carmack's wife?

6 A. I did.

7 Q. Okay. And just so we're all clear, Mr. Carmack's wife is  
8 Ms. Anna Kang?

9 A. Yes.

10 Q. Okay. What kind of contact would you have with Ms. Kang?

11 A. So she had invited me to a lady's luncheon and then also  
12 to a holiday party.

13 Q. Okay. Did you go to that holiday party?

14 A. I did.

15 Q. Okay. And do you remember -- were any other members of  
16 this group we've been talking present at that party?

17 A. Yes, there was Jason and Jan Paul.

18 Q. Okay. Do you remember what you talked about that night?

19 A. So we were on one side of the table with Anna, and she was  
20 being, you know, like a great hostess and I remember her  
21 talking a lot about her childhood in South America, and then we  
22 also talked a lot about bitcoins.

23 Q. What about Oculus? Did you talk about interviewing with  
24 Oculus?

25 A. No.

1 Q. You had just been out to Irvine shortly before then?

2 A. I was.

3 Q. Why not mention that to Mr. Carmack who's working at  
4 Oculus or his wife?

5 A. Because we didn't want to put them in a position where  
6 they could get in any trouble.

7 Q. Why did you think that you talking to them about that  
8 might put them in a position where they're in trouble?

9 A. Because I didn't know what his contract was regarding  
10 solicitation.

11 THE COURT: Stop. Okay. We're going to break for  
12 lunch.

13 Don't talk about the case.

14 We're only going to take one hour.

15 We're trying to get a lot done today.

16 Thank y'all.

17 SECURITY OFFICER: All rise.

18 (Jury out)

19 (Recess at 12:01)

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1 I, TODD ANDERSON, United States Court Reporter for the  
2 United States District Court in and for the Northern District  
3 of Texas, Dallas Division, hereby certify that the above and  
4 foregoing contains a true and correct transcription of the  
5 proceedings in the above entitled and numbered cause.

6 WITNESS MY HAND on this 25th day of January, 2017.

7  
8  
9 /s/Todd Anderson

10 TODD ANDERSON, RMR, CRR  
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